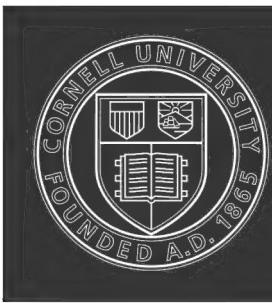


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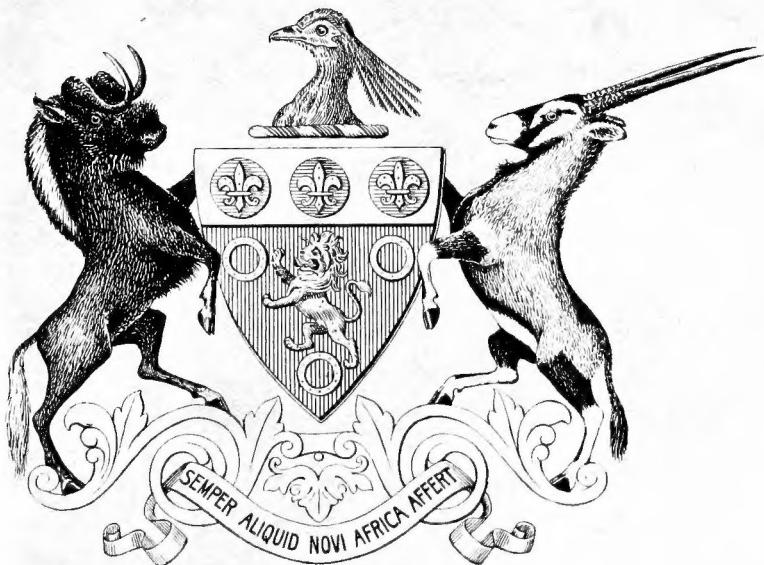
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T H E

FAUNA OF SOUTH AFRICA



EDITED BY

W. L. SCLATER, M.A., F.Z.S.

Director of the South African Museum, Cape Town.

T H E

BIRDS OF SOUTH AFRICA

COMMENCED BY

ARTHUR STARK, M.B.

VOL. IV.

GAME-BIRDS, SHORE-BIRDS AND SEA-BIRDS

WITH 163 ILLUSTRATIONS

BY

W. L. SCLATER, M.A., F.Z.S.

Director of the South African Museum, Cape Town

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PREFATORY NOTE.

THE present volume concludes the account of the birds of South Africa. In it are described 251 species of the Game-, Shore- and Water-birds, making 814 species in all for South Africa. It had been my intention to add a supplement, giving accounts of the species described since the issue of the first volume, with other corrections and additions. The supplement, it was found, would contain so large a number of pages that I was forced to abandon it. The material collected for this purpose, however, has been published in the "Annals of the South African Museum" (vol. iii., part 8, 1905), and can be easily obtained by any one who wishes to consult it.

As in the case of the third volume, I am alone responsible for the contents of this, although I have made some use of Dr. Stark's notebook. I have to thank my numerous South African correspondents for much information and help freely given; among them I should like specially to mention Mr. A. D. Millar, Major Sparrow, Mr. G. A. K. Marshall, Dr. Stoehr, Mr. J. G. Brown of Port Elizabeth, Mr. Haagner, Dr. Howard and Mr. Gilfillan.

As before, the illustrations, with a few exceptions, have been specially prepared for this volume by Mr. Grönvold, to whom I am greatly indebted for the pains and trouble he has taken to carry out my wishes. Mr. H. E. Harris has kindly allowed me the use of five of the blocks prepared from his own photographs and used to illustrate his "Essays and

Photographs," while I have to thank Mr. R. H. Ivy for the photographs of the Cape Redwing, on p. 204, and the Ostrich, on p. 527, and Mr. Austin Roberts for that of the nest of the Goliath Heron on p. 57.

I am in hopes of being able to continue this series with a volume on the South African Reptiles.

W. L. S.

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ADDENDA ET CORRIGENDA.

- P. 114. Before "Genus I. *Plectropterus*," insert " Family I. *Anatidæ*."
 P. 159. For "shalowi" read "schalowi," and for "Shallow" read "Schalow."
 Pp. 237, 238. For "Quartel" read "kwartel" (as on p. 221).
 P. 249. For "Mr. Alfred Millar" read "Mr. Harry Millar."

THE FAUNA OF SOUTH AFRICA.

A V E S.

Order VI. STEGANOPODES.

THE members of this Order may be easily diagnosed by a very obvious external character, recognisable at a glance; the feet are totipalmate, that is, all the toes, including the first, or hallux, which is turned forwards more or less parallel to the other toes, are fully webbed.

Other anatomical characters are—skull desmognathous; nasals holorrhinal; mandible not produced and recurved behind its articulation with the quadrate; basipterygoid processes absent, or at any rate rudimentary; oil-gland tufted; cæca small; leg-muscles varying. The young are hatched blind, either naked or downy, and pass through a long helpless stage, during which they are dependent on their parents.

There are five well-marked families constituting this Order, which contains the birds generally known as Cormorants, Darters, Gannets, Pelicans, Frigate- and Tropic-Birds. Each family consists of only one genus, except the first, to which the Cormorants and Darters are assigned. The relationship of this Order to the others is rather obscure; most authors connect these birds with the Birds of Prey, which they here follow; but Garrod and Beddard consider that the Tubinares are more closely allied to them.

Key of the Genera.

- A. Tail rounded or wedge-shaped; toes fully webbed.
 - a. Middle tail-feathers not produced; nostrils more or less rudimentary.

- a¹.* Bill somewhat slender and distinctly hooked; wings short and rounded *Phalacrocorax*. p. 2.
- b¹.* Bill very slender and sharp-pointed; wings long and pointed *Plotus*, p. 11.
- c¹.* Bill stout and subcylindrical; nostrils obsolete in the adults *Sula*, p. 16.
- d¹.* Bill long and flattened; size very large *Pelecanus*, p. 24.
- b.* Middle tail-feathers much elongated and attenuated; nostrils distinct and pervious; bill compressed and pointed *Phaethon*, p. 23.
- B.* Tail deeply forked; webs between the toes emarginate *Fregata*, p. 22.

Family I. PHALACROCORACIDÆ.

The Cormorants and Darters are diving birds with long flexible necks and generally of black or sooty plumage. The nostrils are small and not pervious, and the cervical vertebræ are twenty in number; the furculum is not fused to the keel of the sternum; the tongue is very small, almost rudimentary in *Plctus*; the skin is not emphysematous, that is to say there are no air-spaces within it; the pterylosis is nearly uniform, the feathering very thick, the apteria or bare spaces being reduced to a very narrow tract on the breast and another on the back between the shoulder blades.

The two genera comprising this family are very distinct in many respects, especially anatomically. They certainly form two sub-families.

Subfamily I. PHALACROCORACINÆ.

Genus I. PHALACROCORAX.

Phalacrocorax, Brisson, *Ornith.* vi, p. 511 (1760).

Bill subcylindrical and somewhat slender, the upper mandible strongly hooked towards the tip; a long groove separates the culmen from the side pieces of the bill; nostrils rudimentary; wings rather short and rounded, the first three primaries about equal, the third usually slightly the longest; tail of twelve or fourteen feathers rather short and stiffened, rounded or cuneate; tarsus short and compressed, all the toes well webbed, the claw of the middle one pectinate.

This is a large genus, containing some forty species, which are found throughout the whole world except, perhaps, in the Central Pacific. Four of these occur within our limits.

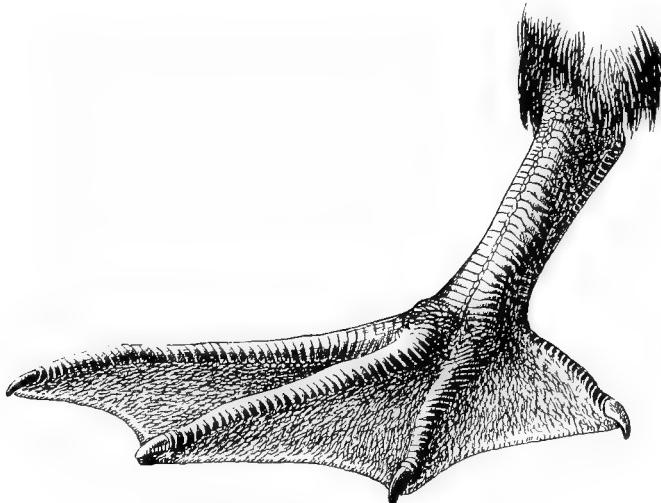


FIG. 1.—Right foot of *Phalacrocorax capensis*. $\times \frac{2}{3}$

Key of the Species.

- A. Tail with fourteen feathers.
 - a. Larger, wing over 12·0; fore-neck and chest white *P. lucidus*, p. 4.
 - b. Smaller, wing less than 11·0; fore-neck and chest black, like the back..... *P. capensis*, p. 5.
- B. Tail of twelve feathers, plumage black throughout.
 - a. Larger, wing between 11·0 and 12·0; skin of throat black *P. neglectus*, p. 8.
 - b. Smaller, wing 8·0 to 9·0; skin of throat yellow *P. africanus*, p. 9.

The common Cormorant of Europe (*P. carbo*) has been stated to occur in South Africa on the authority of Messrs. Layard and Andersson, and I unfortunately confirmed what I now believe to have been an error in a paper in the *Ibis* (1896, p. 522). The example there alluded to as referable to *P. carbo* is undoubtedly only *P. lucidus* in full breeding plumage, and I think it highly improbable that *P. carbo* ever comes so far south as Cape Colony.

564. *Phalacrocorax lucidus.* *White-breasted Duker.*

Halieus lucidus, *Licht.*, *Verz. Doubl.* p. 86 (1823).

Graculus lucidus, *Grill*, *K. Vet. Akad. Handl.* ii, no. 10, p. 56 (1858) [Knysna]; *Layard*, *Ibis*, 1868, p. 120; *Pelzeln*, *Novara Reise*, *Vög.* p. 158 (1865).

Graculus carbo (*nec Linn.*), *Layard*, *B. S. Afr.* p. 380 (1867); ? *Gurney*, in *Andersson's B. Damaval*. p. 367 (1872); *Barratt*, *Ibis*, 1876, p. 214.

Phalacrocorax lucidus, *Sharpe*, ed. *Layard's B. S. Afr.* p. 779 (1884); *Swinburne*, *P. R. Phys. Soc. Edin.* ix, p. 201 (1886); *W. L. Sclater*, *Ibis*, 1896, pp. 521, 1904, p. 84; *Shelley*, *B. Afr.* i, p. 160 (1896); *Grant*, *Cat. B. M.* xxvi, p. 351 (1898); *Woodward Bros.*, *Natal B.* p. 203 (1899); *Marshall*, *Ibis*, 1900, p. 268; *Reichenow*, *Vög. Afr.* i, p. 89 (1900); *Oates*, *Cat. B. Eggs.* ii, p. 199 (1902).

Description. *Adult.*—Crown, back of the neck, middle of the back, rump, upper tail-coverts, and body below from the middle of the breast to the under tail-coverts black, slightly glossed with green; scapulars and wing-coverts bronzy-brown edged with black; wing-quills and tail blackish, slightly glossed with silvery-bronze; the throat, sides and front of the neck, upper chest and a patch on the flanks white; tail of fourteen feathers; head with a few elongated crest feathers.

Iris green; upper mandible black, lower mandible becoming dull white towards the base; pouch mottled greenish and yellow; a yellowish patch below each eye; legs black.

Length about 35·0; wing 12·75; tail 5·0; culmen 3·75; tarsus 2·5.

A young bird is much browner above owing to a number of narrow whitish plumes being mingled with the black, especially on the head and neck; the scapulars and wing-coverts are silvery rather than bronze-brown, and the white of the lower surface extends back to the under tail-coverts, but the flanks and thighs are black, the latter being sometimes slightly mottled with white.

Albino varieties are sometimes met with.

Distribution.—The White-breasted Cormorant is found along the coasts of Cape Colony throughout its extent, and is probably the bird alluded to under the name of *Graculus carbo* by Andersson as occurring in Walvisch Bay, as it has been met with further north, at Landana, in Angola, by Anchieto, while Alexander found it not uncommon in the Cape Verde Islands; up the east coast it occurs as far as Socotra and the Abyssinian coast. Though more usually confined to the coast, it is sometimes met with inland.

The following are recorded localities: Cape Colony — Port

Nolloth (S. A. Mus.), Lambert's Bay, Berg River Mouth and Hoetjes Bay (Stark), Dassen Island, Table Bay (S. A. Mus.), Knysna (Stark), Port Elizabeth (Brown), Port St. Johns (Shortridge); Natal—Eight miles off mouth of Ifafa River (Woodward); Orange River Colony—Kroonstad (Barratt), Vrededorf Rd. (B. Hamilton), Bethlehem, breeding in May (Sparrow); Rhodesia—Umfuli and other Mashonaland Rivers (Marshall).

Habits.—Though not nearly so common as the next species (*P. capensis*), the White-breasted Duiker cannot be called a scarce bird. It is generally seen singly or in pairs flying along with the characteristic flapping flight of all the Cormorants, or sitting on a rock on the edge of the sea drying and sunning itself.

It breeds on most of the islands round the coast of the Colony, noticeably so on Dassen Isle and Marcus Isle at the entrance of Saldanha Bay, also at Dyers Isle off the coast of Bredasdorp, and on a rock just outside the Knysna Heads. The breeding season seems by no means uniform, as the birds were nesting on Dassen Island when I visited it in July, while Stark (according to his note-book) found young birds as well as eggs on the rock off Knysna in February.

The eggs are like those of other Cormorants, differing only in size; they are pale blue in colour and covered with a coat of white chalky matter, which sometimes wears off partially or entirely. Eggs in the South African Museum are nearly regular ovals, measuring 2·50 × 1·60.

Major Sparrow found a pair of this Duiker nesting in a willow-tree on the shore of the lake at Bethlehem, in the Orange River Colony, on May 16th. The clutch consisted of four eggs.

565. **Phalacrocorax capensis.** *Trek Duiker.*

Pelicanus capensis, *Sparrm. Mus. Carls.* iii, pl. 61 (1788).

Graculus capensis, *Grill, K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 56 (1858) [Knysna]; *Layard, B. S. Afr.* p. 380 (1867); *Gurney in Andersson's B. Damaral.* p. 368 (1872); *Holub & Pelzeln, Orn. Süd-Afr.* p. 342 (1882); *Butler, Feilden & Reid, Zool.* 1882, p. 429.

Phalacrocorax capensis, *Gurney, Ibis*, 1864, p. 355 [Durban]; *Sharpe, ed. Layard's B. S. Afr.* p. 780 (1884); *Swinburne, P. R. Phys. Soc. Edin.* ix, p. 201 (1886); *Fleck, Journ. Ornith.* 1894, p. 379; *W. L. Slater, Ibis*, 1896, pp. 521, 522, 1904, p. 82; *Shelley, B. Afr.* i, p. 160 (1896); *Grant, Cat. B. M.* xxvi, p. 352 (1898); *Woodward Bros. Natal B.* p. 203 (1899); *Reichenow, Vög. Afr.* i, p. 92 (1900);

Hellmayr. Journ. Ornith. 1902, p. 236 [Zwartkops] ; *Oates. Cat. B. Eggs*, ii. p. 199 (1902).
 "Cape Cormorant" of some authors.

Description. Adult.—General colour above and below throughout black, slightly glossed with purplish ; the feathers of the sides of the back and wing-coverts bronzy-greenish, edged with black ; chest and fore-neck paler than the other parts of the body, of a dark sepia brown ; tail of fourteen feathers.

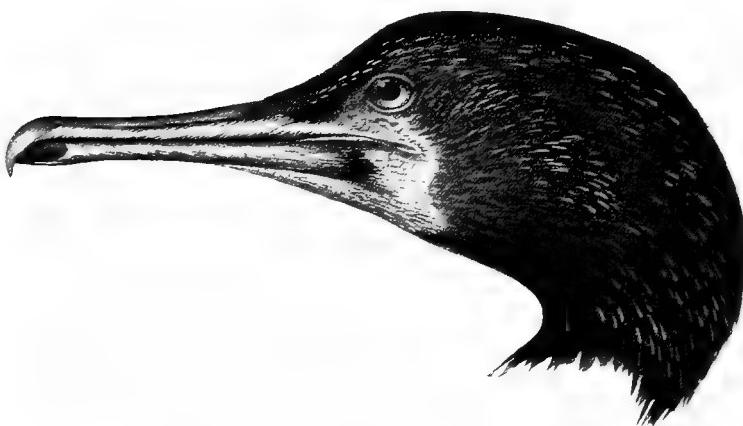


FIG. 2.—Head of *Phalacrocorax capensis*. $\times \frac{2}{3}$

Iris green ; bill slaty-black ; naked skin of the throat and round the eye yellow ; legs black.

Length about 25·0 ; wing 10·75 ; tail 4·5 ; culmen 2·5 ; tarsus 2·0.

Young birds are paler throughout, the foreneck and chest being very pale brown. The iris is greyish at first but gradually becomes green.

Distribution.—The Trek Duiker is found all along the coasts of Southern Africa as far north as the Congo on the west, but not beyond Durban on the east so far as we at present know. It is most abundant on the western coast from Table Bay to Walvisch Bay, and is found nesting on the following islands commencing in the north. From all these islands guano is collected after the birds have finished breeding. Mercury Isle ($25^{\circ} 49' S.$ lat.), Ichaboe and Possession (only a few), Pomoma and Sinclair on the coast of

German South-west Africa, Elephant Rock off Oliphant's River mouth, Islands in Lambert's Bay, Paternoster Isle, Marcus, Jutten and Foundlings Islands near Saldanha Bay, Dassen Island, Dyers Isle, near Danger Point in the Caledon division. Beyond this point Trek Duikers have been observed at Knysna (Victorin), Port Elizabeth and East London (Rickard), Port St. Johns (not plentiful, Shortridge), and about Durban Harbour.

Habits.—The Trek Duiker is extraordinarily abundant about the coast of Western Cape Colony; they are found along the shore and never inland; even in the harbour of Cape Town they may be seen sitting in long rows about the jetties and piers, especially in the less busy parts where there are fewer people about. They fly to their fishing grounds in a long line, sometimes in small parties of three or four, sometimes in enormous flocks, which must often contain millions of birds; their flight is straight and not high above the water or very rapid, and they flap their wings all the time. Their food consists chiefly of fishes, but also of mussels and other marine animals, and during the course of the year they must be responsible for the destruction of enormous numbers. They swim and dive with great facility; when diving they jump up clean out of the water and then plunge down head first. The nesting season is from December to July, though a few birds can be found breeding at all times of the year. The nests are chiefly placed on the ground in the interior of the little islands off the coasts of German South-west Africa and of the Colony; they are built up of sticks and stalks of the low plants and grasses growing on the islands with little or no lining; the eggs, usually four, but varying from two to five in number, are of the usual Cormorant type, oval and pale blue with a chalky white covering; they are usually much soiled after they have been laid for a short time, and measure about $2\cdot15 \times 1\cdot35$.

It is from this bird and from the Malagash (*Sula capensis*) that the chief supplies of Colonial guano are obtained. After the birds have left the islands this is collected from the nests on the rocks and ground around. The amount varies very considerably from year to year, but is usually at least 5,000 tons, and is often more. Quite half of this amount is produced by the present species; this will perhaps give some idea of the enormous numbers of these birds along the coast.

566. **Phalacrocorax neglectus.** *Bank Duiker.*

Graculus neglectus, *Wahlb.*, *Oefvers. K. Vet. Akad. Forh. Stockh.*, 1855, p. 214; *Gurney*, in *Andersson's B. Damaral*, p. 369 (1872).

Phalacrocorax neglectus, *Sharpe*, ed. *Layard's B. S. Afr.* p. 779 (1884); *Fairbridge*, *Ibis*, 1893, p. 278; *W. L. Sclater*, *Ibis*, 1896, pp. 521, 2, 1904, p. 82; *Shelley*, *B. Afr.* i, p. 160 (1896); *Grant*, *Cat. B. M.* xxvi, p. 374 (1898); *Reichenow*, *Vög. Afr.* i, p. 91 (1900).

Description. *Adult.*—General colour throughout black, slightly glossed with greenish, especially below; sides of the back and wing coverts bronzy brown edged with black; round the neck a few scattered white plumelets giving a speckled appearance, and on the rump a few white feathers sometimes very conspicuous, especially when the bird is flying. Tail with twelve feathers only. Sides of the face and throat much more feathered than in the other species; the feathers on the forehead can be erected at will to form a crest.

Iris light brown; sometimes green on the lower half; bill black, greyish at the tip of the upper mandible; naked skin of the eyelid and at the base of the mandible as well as the legs black.

Length of a male (in the flesh) 30·0; wing 11·75; tail 5·5; culmen 2·5; tarsus 2·5; the female is smaller, length 27·0; wing 10·5; culmen 2·25. The young bird is browner throughout. The white feathers on the rump vary in development and are probably a sign of an adult breeding bird.

There is a curious pied variety of this cormorant in the South African Museum in which the head, upper part of the neck, wings and tail are mottled black and white, while the upper and lower surfaces of the body are white with a few scattered black feathers.

Distribution.—The Bank Duiker was first described by the Swedish collector Wahlberg, who met with it on Possession, Halifax and Ichaboe Islands off the coast of Great Namaqualand; from here its range extends southwards certainly as far as Simons Bay. It was met with by Stark at Port Nolloth, and breeds on Jutten Isle at Saldanha Bay and on Dassen Isle.

Habits.—The Bank Duiker has got its name from the fact that for feeding purposes it chiefly frequents fishing banks where there is a good deal of seaweed growing, and about which it finds Crayfish (*Palinurus lalandii*), and Hottentot fish (*Citharus blochi*), which form the bulk of its food.

It is not nearly so abundant as the Trek Duiker, and is generally found only in small parties of three or four. It probably breeds on most of the Guano Islands, but has been observed on Dassen

Island in July, by myself, and in October by Fairbridge, and on Jutten Island by myself in September, so doing. The nest is quite different to that of the Trek Duiker; it is formed entirely of seaweeds—algæ, polyzoa, and hydroids, matted together into a flat cushion, and placed, usually several together, on a smooth rock close to the sea. The eggs, usually two, sometimes three, in number, are of the usual Cormorant type, pale blue overlaid with a chalky white covering; they are larger than those of the Trek Duiker, and average $2\cdot50 \times 1\cdot60$, but vary considerably in length.

This bird is extraordinarily tame when nesting, or perhaps fearlessly attached to its nest, and will often remain there until caught by the hand. It has a loud, melancholy cry to which it gives vent when disturbed.

567. **Phalacrocorax africanus.** *Reed Duiker.*

- Pelicanus africanus*, *Gmel.*, *Syst. Nat.* i, p. 577 (1788).
Carbo africanoides, *Smith*, *Rep. Exped. C. Afr.* p. 57 (1836).
Graculus coronatus, *Wahlberg*, *Oefvers. K. Vet. Akad. Forh. Stockh.* 1855, p. 214.
Phalacrocorax africanus, *Gurney*, *Ibis*, 1862, p. 154; *Kirk*, *Ibis*, 1864, p. 338; *Dresser*, *B. Eur.* p. 169, pl. 390 (1876); *Ayres*, *Ibis*, 1880, p. 273, 1884, p. 233; *Sharpe*, ed. *Layard's B. S. Afr.* p. 781 (1884); *Fleck*, *Journ. Ornith.* 1894, p. 379; *W. L. Sclater*, *Ibis*, 1896, p. 521, 1904, p. 85; *Shelley*, *B. Afr.* i, p. 160 (1896); *Grant*, *Cat. B. M.* xxvi, p. 407 (1898); *Woodward Bros.*, *Natal B.* p. 204 (1899); *Marshall*, *Ibis*, 1900, p. 270; *Alexander*, *Ibis*, 1900, p. 441; *Reichenow*, *Vög. Afr.* i, p. 93 (1900); *Hellmayr*, *Journ. Ornith.* 1902, p. 236 [Pienaars River]; *Oates*, *Cat. B. Eggs*, ii, p. 207 (1902).
Graculus africanus, *Layard*, *B. S. Afr.* p. 381 (1867); *Gurney*, *Ibis*, 1868, p. 264; *Layard*, *Ibis*, 1869, pp. 77, 377; *Gurney*, in *Andersson's B. Damaral*, p. 370 (1872); *Barratt*, *Ibis*, 1876, p. 214; *Ayres*, *Ibis*, 1877, p. 354; *Butler*, *Feilden and Reid, Zool.* 1882, p. 429; *Holub & Pelzeln*, *Orn. Süd-Afr.* p. 341 (1882).
“Crown Duiker” and “Long-tailed Cormorant” of some authors.

Description. *Adult in breeding plumage.* — General colour throughout glossy black; the scapulars and coverts bronzy grey bordered with black, the quills also slightly washed with greyish, but not black-edged: a few white plumelets about the sides of the face and neck, and on the forehead a tuft of rather upstanding black feathers forming a kind of crest. Tail of twelve feathers.

Iris bright red; bill chrome yellow, a little dusky on the ridge and more or less barred; bare skin of face yellow; legs black.

Length about 23; wing 8·75; tail 5·5; culmen 1·25; tarsus 1·5. The adult in non-breeding plumage is brown above and below, only the throat being of a dirty white; there are no white plumelets about the sides of the head, nor is there any trace of a crest. The iris is light ashy brown according to Ayres. Young birds have the head and back of the neck brown, the scapulars and wing-coverts silvery, with a narrow white edging and a subterminal band of black; below dirty white washed with yellowish, most strongly on the lower neck and upper breast.

A young nestling is covered with black down except on the top of the head and on the throat, which are bare and yellow; the iris is pale blue, the bill and legs black, and the webs between the toes brown.

Distribution.—This Duiker is found throughout the greater part of Africa from the Gambia and Upper Egypt (Fayoum) southwards. It also occurs in Madagascar. Unlike the other African Cormorants it is by no means confined to the sea coast, but occurs inland along most of the rivers and on the lakes.

In South Africa the Reed Duiker is generally distributed throughout the country wherever there are suitable conditions. The following are recorded localities: Cape Colony—Table Bay, Dassen Island, breeding July, Saldanha Bay, breeding September, Berg River, breeding September, Port Nolloth (S. A. Mus.), Port Elizabeth (Brown), Port St. Johns (Shortridge), Grahams Town (Barber), Colesberg (Arnot), and Kuruman (Exton); Natal—Newcastle, September (Butler), St. Lucia Lake, June nesting (Woodward); Transvaal—Potchefstroom, May to July (Ayres), Pienaars River, April (Penthal); Bechuanaland—Lake Ngami (Andersson), Nocana on the Okovango, July (Fleck); Rhodesia—Zambesi above Victoria Falls very common (W. Scl.), Shagari, Gurbi and Kirosumo Rivers in Mashonaland (Marshall); German South West Africa—Possession Island, nesting (Wahlberg); Portuguese East Africa—Zambesi (Kirk and Alexander).

Habits.—This little Duiker is found as a rule along rivers and about lagoons and lakes, and is by no means confined to the coast. It is a somewhat solitary bird and has a strong and rapid flight; when swimming it floats very low in the water so that little of its back is visible and only the long neck, craning to and fro like a snake, can be distinguished; it dives with great ease and feeds chiefly on fish, though it will also take insects and mollusca. During the middle of the day it spends most of its time resting on a bare branch

or on a sand bank sunning itself with outstretched wings drooping on either side, and is most active early and late.

The Reed Duiker was found breeding on the Berg River in very large numbers in September by Mr. Layard, and I have myself taken eggs on Dassen Island in July, and on Schaap Island in Saldanha Bay in September, while the Woodwards, when at St. Lucia Lake in Zululand, obtained in June only young birds and no eggs. The nests are composed of sticks and stalks, and several are often found so close together as to be partly interwoven; they are placed on low rocks usually in crevices on Dassen Island, but where there are trees or low bushes, as at Berg River or St. Lucia, these are made use of. The eggs are two or three in number and resemble those of the other Duikers, except that they are a good deal smaller, measuring on an average 1·90 × 1·27.

Subfamily II. PLOTINÆ.

Genus I. PLOTUS.

Type.

Plotus, Linn. *Syst. Nat.* i, p. 218 (1766).....*P. anhinga*.

Bill slender, straight and sharp pointed, the tips of both the mandibles serrated; nostrils rudimentary; head and neck slender and snakelike; wings long and pointed, the second and third primaries the longest; scapulars elongate, lanceolate and pointed; tail long, of twelve feathers, graduated and rigid, the webs of the two central feathers being transversely corrugated; tarsus very short, feet completely webbed, outer toe the longest; claw of the middle toe pectinated.

The anatomical peculiarities characteristic of this genus and subfamily are doubtless special modifications correlated with the curious habits of these birds. The first eight cervical vertebræ (including the atlas and axis) when placed in a natural position form a strong curve with the concavity directed forwards; the eighth vertebra, which is very long, is almost parallel with the bill when held horizontally; on the dorsal surface of the ninth vertebra is a transverse loop, termed Donitz's bridge, ossified in all the species except *P. anhinga*; through this passes the tendon of the longus colli posterior muscle to be inserted in the second, third, and fourth vertebræ; the longus colli anterior is a powerful muscle ending in

a long tendon, attached anteriorly to the hæmapophysis of the eighth, ninth, and tenth vertebræ.

The action of pulling the head back preparatory to striking is effected by the longus colli posterior, the actual striking movement by the longus colli anterior. Another peculiarity in the organisation of *Plotus* concerns the stomach. In *P. rufus*, the South African species, the second or pyloric portion of the stomach is lined all round the opening into the duodenum by a thick coating

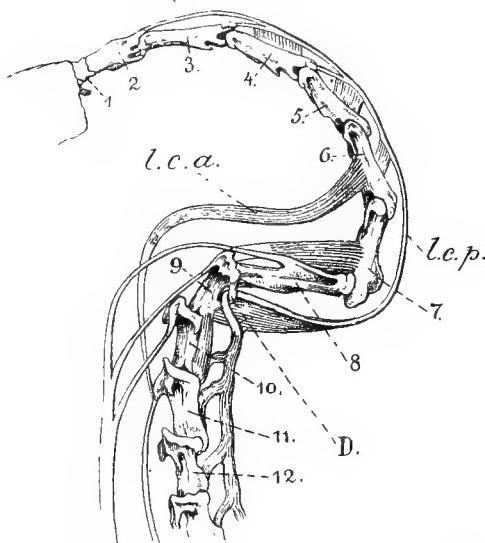


FIG. 3.—Anatomy of the neck of *Plotus*. 1—12 Cervical vertebræ numbered ; *l.c.a.* Tendon of the Longus colli anterior muscle ; *l.c.p.* Tendon of the Longus colli posterior muscle ; *D.* Donitz's bridge (after Garrod).

of hairs, while extending from near the same opening into the lumen of the organ is a conical hair-covered process which evidently acts as a plug or valve to close the entrance into the intestine ; the details of the structure of the stomach are not the same in all the species of the genus.

Four species of this remarkable type are generally recognised, spread over Africa, Madagascar, South Asia, the Malayan Islands, Australia, New Zealand, and tropical and subtropical America. Only the one species, here described, is found in Africa.

568. **Plotus rufus.** *Snake Bird.*

Plotus rufus, *Lacep. et Daud. in Buff. Hist. Nat.* (18^o Didot ed.) *Ois.* xvii, p. 81 (1802); *Grant, Cat. B. M.* xxvi, p. 412 (1898); *Oates, Cat. B. Eggs*, ii, p. 207 (1902).

Plotus congensis, *Cranch in Tuckey's Exped. Riv. Zaire App.* 4, p. 408 (1818); *Layard, B. S. Afr.* p. 378 (1867); *Barratt, Ibis*, 1876, p. 214.

Plotus levaillanti, *Licht. Verz. Doubl.* p. 87 (1823); *Gurney, Ibis*, 1859, p. 251, 1863, p. 332; *Kirk, Ibis*, 1864, p. 338; *Gurney in Andersson's B. Damara*, p. 367 (1872); *Buckley, Ibis*, 1874, p. 391; *Oates, Matabeleland*, p. 328 (1881); *Oakley, Trans. S. A. Phil. Soc.* ii, p. 85 (1881); *Shelley, Ibis*, 1882, p. 368 [Quaequa River]; *Holub & Pelzeln, Orn. Süd-Afr.* p. 333, 2 plates of skeleton; *Butler, Feilden and Reid, Zool.* 1882, p. 429; *Sharpe, ed. Layard's B. S. Afr.* p. 782 (1884); *Tristram, Ibis*, 1886, p. 41, pl. iii; *Symonds, Ibis*, 1887, p. 336; *Fleck, Journ. Ornith.* 1894, pp. 365, 379; *Shelley, B. Afr.* i, p. 161 (1896); *Woodward Bros. Natal B.* p. 204 (1899); *Marshall, Ibis*, 1900, p. 268.

Plotus capensis, *Layard, Ibis*, 1869, p. 77.

Anhinga rufa, *Reichenow, Vög. Afr.* i, p. 95 (1900).

"Anhinga," "Darter" and "Sweet-water Duiker" of some authors.

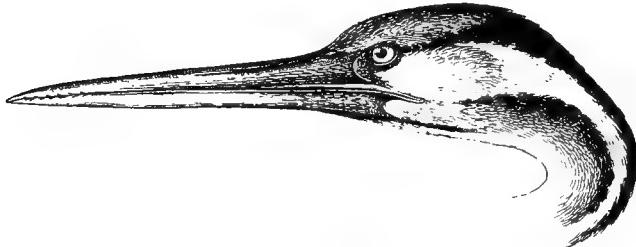


FIG. 4.—Head of *Plotus rufus*. $\times \frac{1}{2}$

Description. *Adult male.*—Crown, back of the neck and upper back dark brown, very finely mottled with dark rufous and black; the back with a few white centres to the feathers; lower back, tail and wings black; scapulars, lesser and median wing-coverts elongate and lanceolate in shape, with a median white stripe; greater coverts bronzy-brown on the outer web, some of the inner secondaries also with a median stripe of the same colour; below the throat and neck rufous; a very narrow band of feathers bordering the throat, forehead and naked skin round the eye and continued for about four inches along the side of the neck white; above this latter a broader

black band ; lower portion of the neck and rest of the under parts black. Tail of twelve feathers.

Iris golden-yellow ; bill greenish-silver at the base, yellowish at the tip ; bare skin of throat creamy ; legs brown.

Length (in flesh) 31·5; wing 13·5; tail 9·0; culmen 3·0; tarsus 1·5.

The female has the head and neck much paler than in the male, both above and below, the throat being nearly white, the black foreneck and chest are bordered on either side by a rufous band, which runs on to the shoulder ; the skin of the throat is black and the legs and feet are of a light mud colour, much lighter than in the male. The dimensions are about the same.

Distribution.—This species is found in Syria, near Antioch, where it was discovered nesting by Canon Tristram, throughout the greater part of Africa from Senegal and Suakim southwards, and in Madagascar ; but it has not hitherto been met with in Egypt or in Northern Africa along the Mediterranean.

In South Africa the Snake Bird is to be found along the larger rivers, but does not, as a rule at any rate, penetrate on to the high veld. Where suitable conditions prevail it is not uncommon. It appears to be a resident.

The following are recorded localities : Cape Colony—Berg River, nesting September (Layard and Stark), Zonder Einde River in Caledon, Zoetendals Vlei in Bredasdorp (Layard), Zwartkops, Buffalo and Nahoon Rivers (Rickard), Chalumna near East London (Barratt), King Williams Town (Bt. Mus.) ; Natal—Umgeni River (Reid), Ifafa (Woodward) ; Orange River Colony—Modder River (Barratt), Valsch River at Kroonstad (Symonds) ; Transvaal—Marico River (Oates), Potchefstroom, Lydenburg and Pretoria (Barratt) ; Bechuanaland—Lake Ngami (Andersson), Nocana (Fleck) ; Rhodesia—Quaequa River (Ayres), Zambesi, about the Victoria Falls very common (W. L. Sclater), Lower Zambesi (Kirk).

Habits.—The Snake Bird is usually found along the banks of the larger South African rivers, generally solitary and seated in an upright position on a dead stump or branch of a tree, overhanging some still, deep reach ; from here it makes excursions into the water to obtain its food, which consists almost entirely of fishes. When swimming, its back and body are so low in the water that only its long neck can be seen waving to and fro, thus reminding the observer of a snake swimming, rather than a bird. It dives with very great ease and dexterity, swimming under water with wings partially expanded and with a peculiar jerky motion of

the neck, something like the poising of a spear before it is thrown. When sufficiently close to the fish it suddenly throws its whole head forward and transfixes its prey on its sharp needle-like bill, both mandibles of which are serrated along their cutting edges. It then rises to the surface, and after a series of upward jerks of the head and neck, succeeds in throwing its prey up in the air, and, opening its bill, swallows it head first. The forward jerk is effected by a peculiar modification of the vertebrae, muscles and tendons of the neck; the eighth cervical vertebra is elongated and larger than the others, and when at rest forms a forwardly directed angle with the seventh and a backwardly directed angle with the ninth; this kink in the neck can be straightened out by the contraction of certain muscles, so that the head is thrown forwards. A detailed account of the whole structure was first given by Garrod (*Proc. Zool. Soc.* 1876, p. 335).

In South Africa the Darter has been found nesting only near Mr. Melck's farm on the Berg River, where it was first observed by Mr. Layard and subsequently by Dr. Stark. The latter's note-book contains the following account: "On September 9th, 1896, at Melck's farm on the Great Berg River I visited a breeding-place of the Snake Bird on the river just above the farm. There were numerous nests built on willow tops projecting from ten to fifteen feet above a still portion of the river. In some places six or eight pairs of Darters occupied a small group of willows by themselves. In others their nests were mixed with those of *Phalacrocorax africanus*, *Ardea cinerea*, *Nycticorax griseus* and *Herodias garzetta*. All the birds were fairly tame, especially the Snake Birds, whose nests were about two-thirds of the way up the willows, which were leafless at that time. The nests were rough bundles of sticks; the birds sit on the nest horizontally with head and neck drawn in. I waded across to some trees in which some ten nests were built and climbed to five from which I took eggs, three to five from each nest. The nests were constructed of dead sticks roughly placed together in a fork of the branch; they measured eighteen inches across by nine inches deep; most of the nests had a scanty lining of green reeds and weeds; they were coated outside with white droppings and had the usual cormorant smell." The eggs taken on that occasion, now in the South African Museum, are rather smooth and shiny, white in colour and elongate in shape: like those of the cormorant, they have the usual underlying bluish layer, and measure on an average $2\cdot20 \times 1\cdot40$.

Family II. SULIDÆ.

The members of this family, the Gannets and Boobies, are white and black, or brown birds living chiefly on the open sea and nesting generally on small islands. The characters are given below under the description of the only genus.

Anatomical characters are—cervical vertibræ, 18; dorsal vertebræ without ventral processes; clavicle not ankylosed to the sternum; ambiens, femorocaudal and semitendenosus muscles only present; no syringeal muscles.

Genus I. SULA.

Type.

Sula, Brisson, *Orn.* vi, p. 494 (1760) *S. leucogastra*.

Bill stout and subcylindrical, the culmen defined on either side by a distinct line; both mandibles serrated, especially along their apical halves, the upper mandible bent down at the tip but not hooked, and with a distinct notch. Nostrils completely closed in the

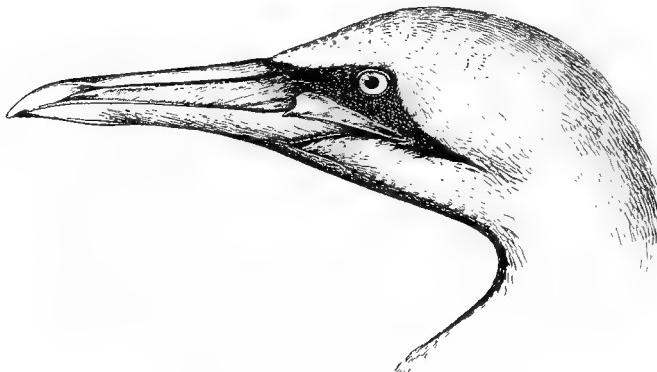


FIG. 5.—Head of *Sula capensis*. $\times \frac{2}{3}$

adults, minute, rudimentary, and basal in the young; a naked patch of skin round the eye and about the chin and throat. Wings long and pointed, first and second primaries the longest. Tail of from twelve to eighteen feathers, wedge-shaped and strongly graduated. Tarsus very short, considerably exceeded in length by the first and second toes, which are sub-equal; claw of the middle toe broad and pectinated on the inner side.

This genus, containing the Gannets and the Boobies, is found throughout the temperate and tropical seas of the world; about eleven different species have been described; only one of these is at all abundant about the South African coasts, while two others probably occur occasionally.

Key of the Species.

- A. A narrow bare line of black skin running down the front of the neck for nearly six inches ... *S. capensis*, p. 17.
- B. Throat naked, but with no bare line running down the front of the neck.
 - a. Plumage above and below pure white *S. cyanops ad.* p. 20.
 - b. Plumage above deep sooty brown.
 - a¹. Larger, wing 17 to 18 *S. cyanops, juv.* p. 20.
 - b¹. Smaller, wing 14 to 15 *S. leucogastra.* p. 21.

569. **Sula capensis.** *Malagash.*

Dysporus capensis, *Licht.*, *Verz. Doubl.* p. 86 (1823).

Sula capensis, *Layard*, *B. S. Afr.* p. 379 (1867); *Gurney*, in *Andersson's B. Damaral.* p. 365 (1872); *Shelley*, *Ibis*, 1875, p. 87; *Butler*, *Feilden and Reid*, *Zool.* 1882, p. 429; *Sharpe*, *cd. Layard's B. S. Afr.* p. 775 (1882); *Swinburne*, *Pr. R. Phys. Soc. Edin.* ix, p. 201 (1886); *Shelley*, *B. Afr.* i, p. 161 (1896); *W. L. Sclater*, *Ibis*, 1896, p. 521; 1904, pp. 81-4; *Grant*, *Cat. B. M.* xxvi, p. 429 (1898); *Reichenow*, *Vög. Afr.* i, p. 84 (1900); *Harris*, *Essays and Photos.* p. 191, pls. xxi, lii (1901).

"Cape Gannet" of some authors.

Description. *Adult.*—General colour pure white with a slight straw-coloured wash on the crown, sides of the head and nape; wing-quills and primary coverts and tail-feathers brownish black, the latter with white shafts. Tail of twelve feathers.

Iris whitish; eyelids light blue; bill pale bluish, naked skin round the eye extending about six inches down the throat as a narrow band, black; legs black, line of large scales running down the front of the tarsus, and along the front of the toes pale blue, claws horny white.

Length (in flesh) 35·0; wing 18·75; tail 8·0; culmen 3·75; tarsus 2·10.

A young bird is dark smoky brown throughout flecked with white, each feather except those of the wing-quills and tail having a triangular white spot at the tip; in a later stage the feathers



FIG. 6.- Colony of Malagasy Sula on Bird Island in Algoa Bay (from Harris).

of the breast and lower surface are banded with white and brown, the colours being about equally distributed ; gradually the bird assumes the white plumage of the adult, the back being the last part to change. In the young bird the bill is brownish-black, and the legs black. The pure white plumage of the adult is not attained until the second year.

Distribution.—The Malagash is found along the coasts of South Africa, extending as far north as Loango in French Congoland on the western, and as Zanzibar on the eastern side.

It is specially abundant on the western coasts of Cape Colony, and of Damaraland. It breeds on the following islands off the coast in very large numbers. Hollams Bird Island, Ichaboe, Possession and Halifax, off the Great Namaqualand coast ; Malagash Island at the entrance to Saldanha Bay, and Bird Island in Algoa Bay in Cape Colony, while eastwards of this it has been observed at sea off East London (Rickard), off Port St. John's (Shortridge), and off Durban (Reid). It is never met with at sea very far from the coast, nor does it range inland except accidentally.

Habits.—The Malagash is often seen about Table Bay in considerable numbers when there are shoals of fish about. It is a powerful bird, and pounces down from a considerable height on to its prey almost perpendicularly ; just before reaching the water it closes its wings, and dives down under water, where it can remain for some time ; when returning to the surface it seems to come up as if impelled by a spring from below. It is also a good swimmer.

At the end of September, or the beginning of October, the birds in adult plumage resort in countless numbers to the breeding islands already mentioned ; the islands are flat, and are covered almost everywhere with birds, which sit so close as to be nearly touching one another. The nest consists of a little mound of mud and guano, with a slight depression at the top, while everywhere between the nest the ground is quite bare, and white with the deposit of excrement. Only one egg is laid, and on this the bird sits very closely, covering it with its large webbed feet ; the eggs are extremely dirty, even soon after they have been freshly laid. Their colour is almost pure white, of a chalky texture overlying a pale blue as in other members of the family. The eggs are almost regular ovals and measure on an average, $3\cdot12 \times 2$.

The young when hatched are covered with white down. As soon as they are able to fly they leave the breeding islands and do

not return till they are quite adult. The old birds leave the islands in April or May, returning again in July or August.

The food of the Malagash consists entirely of fish, which they must consume in enormous quantities. They have a harsh, raucous cry "carra carra" both when flying and when seated on their nests.

The guano produced by these birds and by the Trek Duiker, which as a rule do not nest on the same islands, is collected after the breeding season is over, every year, and forms a valuable asset to the Government of Cape Colony. It is sold to the farmers at about cost price.

570. *Sula cyanops*. *Masked Booby.*

Dysporus cyanops, *Sundev., Physiogr. Sällskapets Tidsk.* i, p. 218, pl. v (1837).

Sula cyanops, *Grant, Cat. B. M.* xxvi, p. 430 (1898); *Reichenow, Vög. Afr.* i, p. 84 (1900).

Description.—General colour white except the quills, greater coverts and tail-feathers, which are blackish brown; chin and throat quite naked, but the bare space not extending as a narrow band down the front of the neck; tail-feathers sixteen or sometimes eighteen in number.

Iris yellow; bill horn coloured, yellowish or greenish; naked skin on the throat bluish-black to dark slate, legs and feet greyish.

Length about 36; wing 17·6; tail 7·3; culmen 4·3; tarsus 2·3.

The young birds are smoky-brown above, with a few white feathers and pure white below.

Distribution.—This species is found throughout the tropical portions of the Atlantic, Pacific and Indian Oceans, and breeds chiefly on oceanic islands.

Its inclusion in the South African fauna rests on a record in the British Museum Catalogue in which an example obtained "at sea, off the Cape of Good Hope" is noted. It is a common bird on Ascension and nests on Boatswain Bird Island close by, whence a series of specimens, obtained by Sir David Gill, is now preserved in the British Museum. In the Indian Ocean it has been found breeding on Farquhar Island between the Seychelles and Mauritius, by Capt. Farquhar, R.N. (*Ibis*, 1900, p. 63).

571. **Sula leucogastra.** *Brown Booby.*

Pelicanus sula, Linn., *Syst. Nat.* i, p. 218 (1766).

Pelecanus leucogaster, Bodd., *Tabl. Pl. Enl.* p. 57 (1783).

Sula sula, Grant, *Cat. B. M.* xxvi, p. 436 (1898); Reichenow, *Vög. Afr.* i, p. 85 (1900).

Description.—Above, including the head, neck and chest, dark sooty-brown, breast and rest of the under parts pure white; tail of fourteen feathers.

Iris silvery-white to grey, bill greenish-white, becoming flesh coloured at the base; naked skin of the throat bluish, greenish or yellowish, legs pale greenish.

Length about 28·0; wing 15·0; tail 7·7; culmen 4·0; tarsus 1·8.

Young birds are brown above and below but much lighter than the adults.

Distribution.—The Brown Booby is found throughout the tropical and subtropical seas of the world, except on the Pacific coast of America.

As in the case of the Masked Booby, an example taken "at sea off the Cape of Good Hope" now preserved in the British Museum, constitutes the only record of its occurrence within our limits.

This Booby is well known on the Island of Ascension, and the skins and eggs brought thence by Sir David Gill some years ago, are now in the British Museum.

Family III. FREGATIDÆ.

The Frigate birds are of large size and powerful flight, resembling in this respect the Birds of Prey. They are oceanic in habit, and nest only on remote oceanic islands.

Anatomical characters are: cervical vertebrae fifteen in number; a large vomer present; furculum ankylosed at its dorsal ends to the coracoids, and at its ventral end to the keel of the sternum; nostrils not pervious; ambiens and femoro-caudal muscles present; syringeal muscles present; skin slightly pneumatic.

The single genus contains only two species closely allied to one another.

Genus I. **FREGATA.**

	<i>Type.</i>
Fregata , Brisson, <i>Orn.</i> vi, p. 506 (1760)	F. aquila.

Bill long, slender and hooked at the tip, the lower mandible also slightly decurved, culmen defined by a line on each side; nostrils rudimentary, linear and basal; skin of the chin and throat bare, forming a gular pouch; wings very long and pointed, almost reaching to the tip of the tail, first primary the longest; tail of twelve feathers, very long and deeply forked, the outer feathers being about twice the length of the central ones; tarsus short and heavily feathered; toes with the webs deeply emarginate and reduced; claw of the middle toe pectinated.

Two closely allied species found throughout the tropical and subtropical seas of both Hemispheres are generally recognised; one of these probably occasionally reaches our coasts.

572. **Fregata aquila.** *Frigate Bird.*

Pelecanus aquilus, Linn., *Syst. Nat.* i, p. 216 (1766).

Fregata aquila, Shelley, *B. Afr.* i, p. 160 (1896); Grant, *Cat. B. M.* xxvi, p. 443 (1898); Reichenow, *Vög. Afr.* i, p. 87 (1900).

Description. Male.—Plumage black throughout, richly glossed above with metallic purple; tail of twelve feathers.

Iris dark brown; bill bluish-grey; gular pouch scarlet; feet reddish.

Length about 40·0; wing 22·0; tail 14·0; tarsus 0·7; culmen 4·0.

Females have the whole breast white, this colour extending back laterally to the flanks; the back is brownish-black and most of the wing-coverts have pale brown or whitish edges; there is no gular pouch, but the skin of the throat is plumbeous.

Distribution.—This powerful flyer is spread all over the tropical and subtropical seas of both hemispheres, and sometimes wanders beyond those limits. It is a well-known bird on Ascension, where it breeds on the Boatswain-bird Islet in company with the Boobies and Wideawakes. It has also occurred at St. Helena, the Crozet Islands, Madagascar and Kerguelen.

There is no definite evidence of its being met with on the South African coasts, but I have had described to me a bird which certainly appeared to be referable to this species; it was seen by my

informant on the beach at Hermanus, a fishing village on the coast in the Caledon district, in February, 1902.

Family IV. PHÆTHONTIDÆ.

The Tropic Birds are purely oceanic in their distribution and are found as a rule only in the warmer portions of the world, as their name implies ; they combine the structure of the Gannet with the habits of the Tern.

The chief characters are :—Cervical vertebræ fifteen in number ; palatines not coalesced, so that the palate can hardly be termed desmognathous ; nasal apertures large and pervious ; vomer large ; femoro-caudal, semitendinosus and accessory semitendinosus present, ambiens sometimes present, sometimes absent ; skin highly pneumatic ; eggs always spotted.

Genus I. PHÆTHON.

Type.

Phaëthon, *Linn. Syst. Nat.* i, p. 219 (1766) *P. æthereus*.

Bill strong and compressed, the culmen evenly curved but not hooked ; the mandibles serrated along their cutting edges. Nostrils distinct, basal and linear ; no naked skin about the eye or throat. Wings long and pointed, first primary the longest. Tail of from twelve to sixteen feathers, wedge-shaped, the two central feathers very much elongated and attenuated. Tarsus short, toes moderate, fully webbed, fourth toe very much smaller than the others, claw of the middle toe slightly pectinated.

Six species of this genus, generally known as Tropic Birds, have been described ; they are confined to intertropical parts of the oceans of both hemispheres, though doubtless occasionally wandering beyond these limits. One species is recorded from our shores.

573. **Phaëthon rubricauda.** *Red-tailed Tropic Bird.*

Phaëthon rubricauda *Bodd., Tabl. Pl. Enl.* p. 57 (1783) ; *Sharpe, ed. Layard's B. S. Afr.* p. 775 (1884) ; *Shelley, B. Afr.* i, p. 162 (1896) ; *Grant, Cat. B. M.* xxvi, p. 451 (1898).

Description.—General colour white, tinged with rosy ; a patch in front of the eye and a small streak behind, shafts of the primaries

and tail-feathers except at the ends and the broad shaft stripes to the inner secondaries, all black; the elongated and pointed middle tail-feathers have black shafts and red webs.

Iris black; bill yellow; legs yellow, becoming black on the webs and toes. Length (including long tail feathers) about 33·0; tail about 4·0; the long central feathers 19; wing 13·0; tarsus 1·25; culmen 2·50.

Distribution.—The Red-tailed Tropic Bird is found throughout the warmer portions of the Indian and Pacific Oceans. It breeds on Round Island, near Mauritius. The only evidence yet obtained of its occurrence along our shores is the finding of an apparently freshly shed red tail feather on the beach at Port Elizabeth by Mr. Rickard, as stated by Sharpe and Layard. Captain Turbyne, however, of the Government Trawler S.S. Pieter Faure, recently shot an undoubted example of this species off Mossel Bay, but, owing to the high sea then prevailing, was unable to secure the specimen.

Phaethon lepturus and *P. aethereus* both breed on Ascension, the range of the former extending into the Indian and Pacific Oceans, while that of the latter, so far as is known, does not reach the Indian Ocean. It is possible that both these species may be found as wanderers on the South African coasts. *P. lepturus* has the basal portion of the mandible very dark horn colour, and a white tail with black shafts, while *P. aethereus* is a larger bird (wing about 11·5), with a bright coral red bill, and the back and most of the wing-coverts are transversely barred with black.

Family V. PELECANIDÆ.

The Pelicans are less purely marine birds than the members of the other families of the order. The external characters are enumerated in the description of the genus, to which may be added the following anatomical peculiarities: seventeen cervical vertebrae; clavicle ankylosed to the sternum; femorocaudal and semitendinosus muscles present; no syringeal muscles.

Genus I. PELECANUS.

Pelecanus, Linn., *Syst. Nat.* i, p. 215 (1766) *P. onocrotalus*.
Type.

Bill long and flattened, the culmen forming a rounded ridge and ending at the tip in a downwardly curved hook; nostrils very small and rudimentary at the base of the groove on each side of

the culmen; a very large pouch of naked skin depending from between the two somewhat flexible rami of the lower jaw and reaching posteriorly some way down the neck; wings long but the secondaries as long as the primaries; tail very short, of twenty-two or twenty-four feathers, slightly cuneate; tarsus shorter than the middle toe, reticulated and sharply ridged posteriorly; toes fully webbed, the claw of the middle toe pectinated.

About eleven species of Pelicans are generally recognised, spread over the tropical and temperate regions of both hemispheres. Three of them have been recorded from Africa and two from South Africa.

Key of the Species.

- A. Feathers of the forehead terminating in a forwardly directed point; general colour white tinged with rosy pink *P. roseus*, p. 25.
- B. Feathers of the forehead terminating in a concave line at the base of the culmen, only the middle of the back washed with pink *P. rufescens*, p. 27.

574. **Pelecanus roseus.** *Eastern White Pelican.*

Pelecanus roseus, *Gmel.*, *Syst. Nat.* i, p. 570 (1788); *Grant*, *Cat. B. M.* xxvi, p. 466 (1898); *Reichenow*, *Vög. Afr.* i, p. 101 (1900).

Pelecanus minor, *Rüppell*, *Mus. Senck.* ii, p. 185 (1837); *Elliot*, *Proc. Zool. Soc.* 1869, p. 580; *Gurney*, in *Andersson's B. Damaral.* p. 371 (1872); *Shelley*, *B. Afr.* i, p. 161 (1896).

Pelecanus mitratus, *Licht.*, *Abh. Akad. Berl.* 1838, p. 436, pl. iii, fig. 2 (1838); *Grill*, *K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 56 (1858); *Gurney*, *Ibis*, 1861, p. 135 [Natal]; *P. L. Sclater*, *P. Z. S.* 1868, p. 266 [fig. head], *Holub & Pelzeln*, *Orn. Süd-Afr.* p. 343 (1882); *Sharpe*, ed. *Layard's B. S. Afr.* p. 776 (1884); *Fleck*, *Journ. Ornith.* 1894, p. 380; *Woodward Bros.*, *Ibis*, 1900, p. 524.

Pelecanus sp., *Kirk*, *Ibis*, 1864, p. 338.

Pelecanus onocrotalus (*nec Linn.*) *Layard*, *B. S. Afr.* p. 381 (1867); *Bryden*, *Gun and Camera*, p. 401 (with sketch) (1893); *id. Nature and Sport*, p. 1 (1897); *Alexander*, *Ibis*, 1900, p. 442.

Description. Adult Male.—General colour white tinged with rosy-pink; primary coverts and primaries black, the latter with white shafts; secondaries varying from ashy-black at first to ashy-white within; breast-patch pale yellow; a very slight occipital crest of narrow lanceolate feathers; tail of twenty-two feathers (sometimes twenty-four).

Iris deep hazel red; bare skin of the face purplish-white; base of the upper and lower mandibles pale purplish-white, the midrib paler at the base, darker in the middle, shading to greyish-pink at the nail, sides of the upper mandible pale gamboge yellow with streaks of light red radiating from the edge, which is uniform bright red; terminal half of the lower mandible pale greyish-yellow; pouch gamboge yellow; legs pale pinkish straw-yellow; webs greyish-yellow.

Length 67·0; wing 27·5; tail 8·0; culmen 16·5; tarsus 4·5. The female has a much longer occipital crest measuring four or five inches and is smaller than the male, length about 59·0; wing 26·0; culmen 13·0.

The nestling is covered with brown down throughout; the bill, pouch and naked skin are darker brown and the legs bluish pink.

Distribution.—This Pelican, closely allied to the true White Pelican (*P. onocrotalus*) found in Southern Europe, from which it only differs in its smaller size, shorter bill and tail composed of twenty-two instead of twenty-four feathers, is found in Southern Asia as far as the Philippine Islands, in Africa and occasionally in South-east Europe.

In South Africa this Pelican is chiefly found along the coast; it has also been met with in the Lake Ngami region in Bechuanaland, and on the lower Zambesi, but not, so far as I am aware, at other places in the interior.

The following are recorded localities: Walvisch Bay and Sandwich Harbour (Andersson); Lake Ngami, August (Fleck); Botletli River (Bryden); Salt River near Cape Town (S. A. Mus.); Quoin Rock near Quoin Point in Caledon district, breeding December and January (W. L. Selater); Zoetendaal vlei (Layard); Knysna (Victorin); St. Lucia Lake in Zululand (Woodward); lower Zambesi (Alexander).

Habits.—The best account of the habits of the Pelican in South Africa is that given by Bryden, who met with these birds in considerable numbers on the Botletli River. He found that they roosted among the reeds at night, and after fishing for their morning meal betook themselves with wonderful aerial evolutions to a neighbouring salt-pan, where they remained during the day, returning to the river-bed towards evening.

Pelicans are found along the sea coasts, and in the interior only along the larger rivers and in marshes where there is a plentiful supply of fish, on which they feed exclusively; they fly well with

the neck bent and the head close to the shoulders; and often ascend to a great height in the air; they also swim well and strongly, but are said not to dive. They pursue their prey in considerable numbers in a long line, driving the fishes before them in the shallow water and catching them when floundering. They fill their elastic pouches beneath their enormous bills with great quantities of fishes, which they devour at leisure or carry off to disgorge to feed their young.

This Pelican was found breeding, by Andersson, near Lake Ngami; he states that the nest is built among the bushes, and that a single white egg is laid in the month of June. It occurs about several of the Guano Islands round the coast, but is not encouraged at all, as it destroys a good many young Duikers. There are eggs in the South African Museum from Dyers Island, on the Caledon Coast, but the bird now breeds only on Quoin Rock, an islet off Quoin Point some distance to the east of Dyers Island.

The eggs in the South African Museum are smooth long ovals of a white colour, slightly stained with brownish; they measure about $3\cdot60 \times 2\cdot30$.

Dr. Kirk found a Pelican, probably of this species, breeding on a low sand island at the Kingani mouth of the Zambesi; the nests were slight hollows in the sand with a few sticks as a platform, and contained from two to four eggs.

575. *Pelecanus rufescens*. *Pink-backed Pelican.*

Pelecanus rufescens, *Gmel. Syst. Nat.* i, p. 571 (1788); *Cretzschmar in Rüppell's Atlas*, p. 31, pl. 21 (1826); *Gurney, Ibis*, 1861, p. 135, 1868, p. 264 [Natal]; *Layard, B. S. Afr.* p. 282 (1867); *P. L. Sclater P. Z. S.* 1868, p. 267, pl. 26 and fig. 4, 1871, p. 633; *Sharpe, ed. Layard's B. S. Afr.* p. 777 (1884); *Shelley, B. Afr.* i, p. 161 (1896); *Grant, Cat. B. M.* xxvi, p. 474 (1898); *Woodward Bros., Natal B.* p. 205 (1899); *Reichenow, Vög. Afr.* i, p. 102 (1900).

Description. Adult in Breeding Plumage.—General colour throughout white, the interscapular region, middle of the back and rump, flanks and under tail-coverts washed with pink; primaries and primary coverts and their shafts black, the secondaries ashy-black, gradually becoming white; tail-feathers twenty in number, slightly ashy with dark brown shafts; an occipital crest of narrow

lanceolate feathers four to five inches long ; on the chest is another clump of similar lanceolate and pointed feathers.

Iris yellowish-brown mottled darker ; bill yellowish-white, the nail at the tip of the upper mandible orange ; pouch flesh-coloured, with fine transverse equidistant parallel lines ; legs yellowish-white.

Length 56·0; wing 22·5; tail 7·5; culmen 13·5; tarsus 3·25.

In the non-breeding plumage and in young birds the wings are brown throughout, there is no pink wash on the back, flanks and under tail-coverts, these parts being white ; the tail is dark brown with the base white.

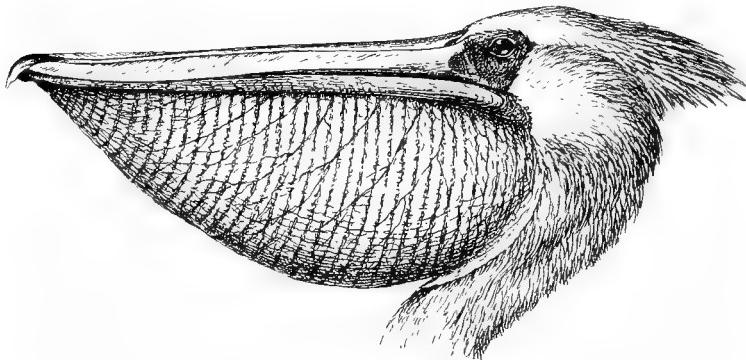


FIG. 7.—Head of *Pelecanus rufescens*. $\times \frac{1}{5}$

Distribution.—The Pink-backed Pelican is confined to Africa and Madagascar, ranging from the Gambia and Abyssinia southwards to the Cape.

It is by no means a common bird within our limits, and is much less often met with than the White Pelican ; in fact, so far as I am aware, it has only been observed by Messrs. Layard and Ayres, by the former near Cape Town and at Zoetendals Vlei, in the Bredasdorp district, and by the latter in Natal, in Durban Harbour. Mr. Wood informs me that an example was recently shot about twenty miles up the coast from East London, and is now preserved in the King William's Town Museum.

Habits.—Ayres gives a good account of the habits of this Pelican as follows : “ These birds frequent the bay and the mouths of rivers on the coast ; their food, I believe, consists entirely of fish. They appear to feed in the evening and early in the morning, basking in the sun during the day. They are gregarious, and may be seen

in flights of from three to thirty, which occasionally come inland. In their flight they generally form the letter V. They are found here all the year round more or less, frequenting the most retired parts of the bay, and are exceedingly shy and wary. These Pelicans soar to an immense height, wheeling round and round, especially when coming from a distance."

I have not heard of the nesting of this species within our limits.

Order VII. HERODIONES.

This Order contains the Storks, Herons, Ibises and Spoonbills. They are all marsh-loving birds, mostly of large size, and all have long bills, necks and legs. The lower half of the tibial portion of the leg is nearly always bare, and the toes are long with only a small basal web as a rule, while the hind toe is jointed on a level with the others in nearly every case; the young are hatched helpless and are dependent on their parents for a considerable time. The Ibises and the Spoonbills have been considered by some authors, especially by Garrod and Forbes, to be more closely allied to the Wading Birds (*Limicolæ*), because of their schizorhinal nasal bones, but on the whole they seem to be better placed here.

The principal anatomical characters are as follows:—skull desmognathous; no basipterygoid processes; nostrils pervious; two carotids; cæca present, generally small; oil gland tufted.

The Order comprises six families, representatives of five of which are found in South Africa. The sixth contains only the Whale-headed Stork (*Balaeniceps rex*), a very curious type found only on the upper Nile and Victoria Nyanza.

Key of the Genera.

- A. Bill long, straight and more or less compressed; only the tip sometimes decurved.
 - ā. A distinct basal web between both the inner and middle and outer and middle toes, most developed between the latter; claw of the middle toe not pectinated.
 - a¹. Culmen more or less ridged and straight throughout, not down-curved at the tip.

- a².* Under tail-coverts lengthened and stiffened to resemble the true rectrices.
- a³.* Black tail-feathers slightly forked, and of about the same length as the white under tail-coverts; sides of the face and upper throat bare *Abdimia* p. 32.
- b³.* Black tail-feathers very deeply forked, clearly exceeded in length by the stiffened under tail-coverts; face and head feathered; neck covered with woolly down *Dissura*, p. 34.
- b².* Under tail-coverts not stiffened or elongated to resemble the true rectrices.
- a³.* Edges of the mandible meeting throughout their length.
- a⁴.* Culmen shorter than the tarsus, head and neck feathered *Ciconia*, p. 37.
- b⁴.* Culmen about equal to the tarsus.
- a⁵.* Head and neck feathered; a flat frontal plate at the base of the bill *Ephippiorhynchus*, p. 43.
- b⁵.* Head and neck bare or with a sparse woolly covering only; no frontal plate *Leptoptilus*, p. 45.
- b³.* Edges of the mandible not meeting in the middle portion of the bill; culmen distinctly longer than the tarsus; head and neck feathered... *Anastomus*, p. 41.
- b¹.* Culmen rounded, not ridged; distinctly down-curved at the tip; crown and face naked *Pseudotantalus*, p. 48.
- b.* A distinct basal web between the middle and inner and middle and outer toes respectively; claw of the middle toe pectinated
- c.* A basal web between the middle and outer toe, obsolete between the inner and middle toe; claw of the middle toe pectinated.
- a¹.* With twelve tail-feathers.
- a².* Naked portion of the tibia equal to or exceeding the inner toe and claw in length.
- a³.* Plumage grey above, varied beneath, large birds with long legs. *Ardea*, p. 55.

- b*³. Plumage white throughout, with trains of decomposed plumes in the breeding season *Herodias*, p. 64.
- c*³. Plumage slaty black, without decomposed plumes *Melanophoyx*, p. 70.
- b*⁴. Naked portion of the tibia distinctly less than the inner toe and claw.
- a*⁴. Mandibles serrated along their edges towards the tips.
- a*⁴. Culmen exceeding in length the middle toe and claw; plumage not principally white; no decomposed ornamental plumes... *Butorides*, p. 79.
- b*⁴. Culmen about equal to the middle toe and claw.
- a*⁵. Plumage rufous and slaty, no decomposed ornamental plumes, but a well-developed neck frill *Erythrocnus*, p. 77.
- b*⁵. Wings, body and tail white; a train of decomposed ornamental dorsal plumes in the breeding season *Ardeola*, p. 75.
- c*⁴. Culmen shorter than the middle toe and claw; plumage white except the decomposed ornamental plumes *Bubulcus*, p. 72.
- b*³. Mandibles not serrated but with a distinct subterminal notch: culmen about equal to the tarsus ... *Nycticorax*, p. 82.
- b*¹. With ten tail-feathers only; mandibles serrated at the tips.
- a*³. Tarsus about equal to the middle toe and claw *Ardetta*, p. 86.
- b*³. Tarsus considerably shorter than the middle toe and claw *Botaurus*, p. 91.
- B.* Bill long and curved throughout.
- a.* Tarsus reticulated in front with hexagonal scales.
- a*¹. Whole head and neck naked; inner secondaries prolonged to form ornamental plumes *Ibis*, p. 94.
- b*¹. Head and upper third of neck only naked; cranium swollen; inner secondaries normal *Geronticus*, p. 97.
- c*¹. Head and neck feathered, only the lores naked; inner secondaries normal *Hagedashia*, p. 100.

- b.* Tarsus with transverse scutes in front; head and neck feathered, only the lores bare *Plegadis*, p. 102.
- C.* Bill flattened, narrow in the middle and spatulate at the tip *Platalea*, p. 104.

Family I. CICONIIDÆ.

The Storks are all large birds with stout, long, straight bills, not hooked at the tip (except *Pseudotantalus*), and without distinct grooves on either side; the nostrils are pervious; the tibiae half bare; the front toes are webbed at the base, the outer one specially so, and the claw of the middle toe is not pectinated; the eggs are white and the young are hatched naked and dependent on their parents for some time. Anatomical characters are:—skull holorbinal; angle of the mandible not produced and recurved behind the articulation with the quadrate; cervical vertebræ seventeen in number; two separate carotids; two small cæca; no intrinsic muscles to the syrinx (so no voice); no powder-down patches; femorocaudal, semiteudinosus, accessory semitendinosus and ambiens generally present; femorocaudal and ambiens absent in some genera.

Genus I. ABDIMIA.

Type

Abdimia, *Bp. Comptes Rend.* xl, p. 721 (1855) *A. abdimii*.

Bill straight, with a horny plate at the base; sides of the face and upper throat bare; tail slightly forked, the two central rectrices being rather shorter than the others; under tail-coverts elongated and stiffened so as to appear like the true rectrices and of about the same length.

Only one species, confined to the Ethiopian Region, is included in this genus.

576. **Abdimia abdimii.** *White-bellied Stork.*

Ciconia abdimii, *Licht., Verz. Doubl.* p. 76 (1823); *Cretzschm. in Rüpp. Atlas*, p. 11, pl. 8 (1826); *Layard, B. S. Afr.* p. 315 (1867); *Shelley, Ibis*, 1882, p. 364; *Sharpe, ed. Layard's B. S. Afr.* p. 730 (1884); *Ayres, Ibis*, 1886, p. 297; *Shelley, B. Afr.* i, p. 159 (1896); *Marshall, Ibis*, 1900, p. 267.

Sphenorhynchus abdimii, *Gurney* in *Andersson's B. Damara*, p. 280 (1872); *Oates*, *Matabeleland*, p. 327 (1881); *Fleck*, *Journ. Ornith.* 1894, p. 386.

Abdimia abdimii, *Sharpe*, *Cat. B. M.* xxvi, p. 292 (1898); *Reichenow*, *Vög. Afr.* i, p. 343 (1901).

Description. Adult Male.—General colour above black, slightly glossed with steel green and purple, more distinctly on the hind neck; back, rump and upper tail-coverts white; wing-coverts blackish, glossed with steel green and purple, lesser coverts almost coppery; wings and tail like the coverts; head, neck and fore-neck metallic green and purple; rest of the under surface from the fore-neck downwards, including the axillaries and under tail-coverts, white; under wing-coverts blackish with a metallic green gloss.

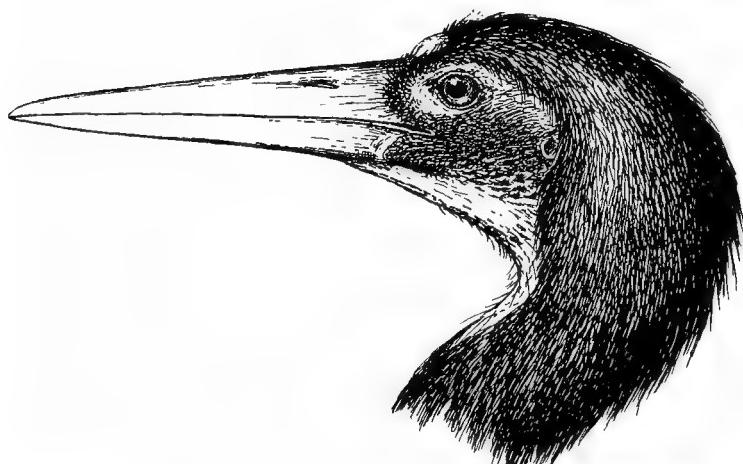


FIG. 8.—Head of *Abdimia abdimii*. $\times \frac{1}{2}$

Iris greyish-brown; bill horny-green with crimson tip; cheeks bright lead colour; skin round the ears, in front of the eyes, nostrils and throat crimson; legs dull olive; feet and knees crimson; claws black.

Length about 30; wing 17·5; tail 7·2; culmen 4·4; tarsus 4·8.

The sexes are alike; the young differs from the adult in wanting the metallic lustre, the head and neck being brown without gloss; iris light tawny-brown; bill reddish towards the tip, greenish towards the base; bare skin round the eye and chin red, in front of the ear bluish; legs and feet dingy brick-red.

Distribution.—The White-bellied Stork is found throughout the drier parts of Africa from Senegambia and the Upper Nile southwards. It is also met with in Southern Arabia, and is stated to have wandered into Southern Spain, but does not occur in the tropical portion of the West Coast of Africa.

Within our limits it appears to be common during the rainy season in the summer in parts of Griqualand West, German South-west Africa and Rhodesia, but is very rare south of the Orange River and has not been noticed in Natal.

The following are localities : Cape Colony—King Williams Town (Trevelyan in Bt. Mus.), Spaldings, in Barkly, February, Makara River, in Vryburg, January (Ayres); Transvaal—near Mooi River in Potchefstroom dist., January (Ayres); Bechuanaland—Lake Ngami (Chapman); Rhodesia—Matoppos (Albany Mus.), near Salisbury, in summer (Marshall); German South-west Africa—Damaraland, in summer (Andersson), Reheboth, January, Doornfontein, March (Fleck).

Habits.—This Stork inhabits open grassy country near rivers and swamps, and is generally met with in large flocks; it is specially fond of locusts, and is usually found in the neighbourhood of swarms of this insect, but it also devours beetles, small reptiles, fishes and other animals. On hot days it often soars to a great height above the ground, so that it becomes a mere speck in the blue sky.

It seems to be found in South Africa only in the summer months, and has not been detected breeding; but in Dongola and on the Upper Nile it nests, according to Heuglin, in July and August about the villages, and even on the straw huts of the natives. Chapman remarks that the flesh of this Stork is very good eating, but Ayres states the contrary.

Genus II. DISSURA.

Type.

Dissoura, *Cab. Preuss. Staats Anz. Beilage*, Sept. 1,

1850, p. 1484 D. episcopus.

Bill long, the culmen nearly straight, very slightly decurved towards the tip; sides of the face and throat feathered, except just in front of the eye and on the space between the lower mandibles; neck covered with woolly down all round; tail-feathers black, very strongly graduated so as to form a deep fork, and exceeded in

length by the under tail-coverts, which are white and stiffened so as to resemble the true rectrices ; legs rather short, the tarsus not twice the length of the middle toe and claw and covered throughout with hexagonal scales.

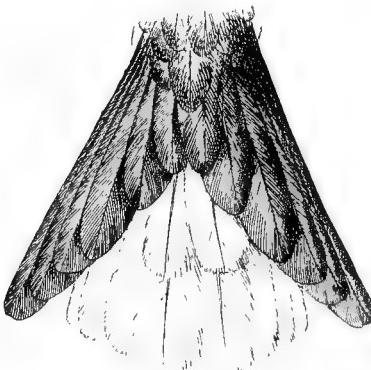


FIG. 9.—Tail of *Dissura microscelis*. $\times \frac{1}{3}$, from above to show the black rectrices and the elongated white under tail coverts.

This genus is spread all over the Ethiopian and Indian regions as far as Cochin China and Celebes. Two species are recognised by Reichenow, who distinguishes the Indian from the African bird.

577. **Dissura microscelis.** Woolly-necked Stork.

Ciconia microscelis, Gray, Gen. Bds. iii, p. 561, pl. 151 (1848).

Ciconia leucocephala (nec *Gmel.*) Gurney, Ibis, 1859, p. 248 [Natal] ; Layard, B. S. Afr. p. 315 (1867).

Ciconia episcopus (nec *Bodd.*) Sharpe, ed. Layard's B. S. Afr. p. 731 (1884) ; Shelley, B. Afr. i, p. 159 (1896) ; Shortridge, Ibis, 1904, p. 206.

Dissoura episcopus, Sharpe, Cat. B. M. xxvi, p. 294 (1898).

Dissoura microscelis, Reichenow, Vög. Afr. i, p. 347 (1901) ; Finsch, Orn. Monatsb. 1904, p. 95.

Description.—Forehead and crown black, the latter streaked with white, a narrow white band on the forehead ; hinder parts of the head and neck clothed with white woolly down ; sides of the head and chin less thickly covered with white down and spotted with black ; lower neck, rest of the upper surface and breast black with reddish and greenish coppery metallic reflections ; tail-feathers like

the back in colour, very deeply graduated and forked, and not to be confused with the long and strong white under tail-coverts, some of which exceed the rectrices proper in length; below, including the axillaries and under wing-coverts, black, with metallic gloss; abdomen and under tail-coverts white; leg feathering white mixed with black.

Iris dark red; bill black, reddish along the culmen and at the tip; legs dull reddish-black.

Dimensions (of a female); length (in flesh) 34·25; wing 18; tail 7·0; culmen 5·5; tarsus 6·25; middle toe and claw 3·5. A male is similar in plumage but a little larger; wing 20; culmen 6·5.

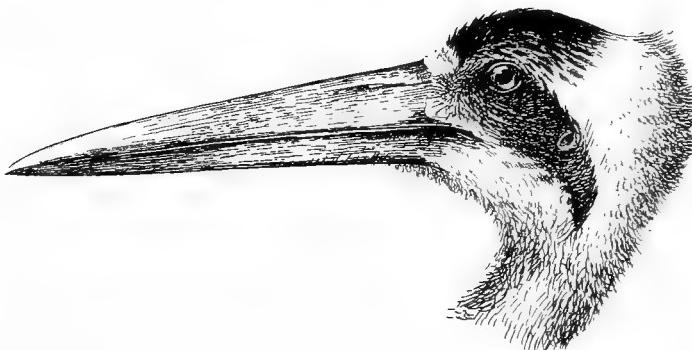


FIG. 10.—Head of *Dissura microscelis*. $\times \frac{2}{3}$

Young birds have less gloss and a basal line of white feathers on the forehead, which gradually disappears.

Distribution.—The Woolly-necked Stork is found throughout Africa from the Gambia and Abyssinia southwards. It is represented in Southern Asia by a closely allied species, hitherto considered identical with it but recently separated by Reichenow on account of its somewhat larger size and different markings. In South Africa this Stork appears to be a very rare bird. It was recorded many years ago from the coast of Natal; by Ayres, and there are two examples of it in the British Museum labelled Cape Colony, while recently the South African Museum has acquired a specimen from the St. Johns' River in Pondoland, where it is stated to be not infrequent.

Habits.—Mr. Ayres states that this Stork frequents the bays and swamps along the coast of Natal, where it wades in the receding

tide after small crabs and shell fish, on which it chiefly feeds ; it is gregarious and not very shy, and the flesh is coarse. Mr. Shortridge observed a flock of six of these birds, which came down to the St. Johns' River in September, 1902, accompanied by a single Black Stork. He tells me that they are known locally as the "Pied Hadadah," and that they visit the St. Johns' River regularly during the winter. This species is not known to nest in South Africa, but in the Shilluk country of the Upper Nile Antinori noted a breeding place, in December. The nests were on low trees at some distance apart from one another, and one of them contained two young in down.

Genus III. CICONIA.

	<i>Type.</i>
Ciconia, Briss. Orn. v, p. 361 (1760)	<i>C. alba.</i>

Bill straight, tapering and pointed, culmen shorter than the tarsus, the tomiae or cutting edges of the mandibles meeting throughout their length, and the angle at the gony hardly marked, so that the lower edge of the lower mandible is nearly straight ; head and neck fully feathered except for a space surrounding the eye and a small space on the throat ; tail-coverts, both upper and lower, normal, rather long but not stiffened or elongated, or in any way resembling the true rectrices ; tarsi long, more than twice the length of the middle toe and covered with reticulate scales.

Three species of this genus are generally recognised, two of which visit South Africa during the southern summer months. The range of the genus includes the whole of the Palæarctic, Ethiopian and Indian regions.

Key of the Species.

- A. Head, neck and upper back white..... *C. alba*, p. 37.
- B. Head, neck and upper back black, with metallic gloss *C. nigra*, p. 39.

578. **Ciconia alba.** *White Stork.*

Ardea ciconia, Linn., Syst. Nat. i, p. 235 (1766).

Ciconia alba, Gurney, Ibis, 1860, p. 220 [Natal] ; Layard, B. S. Afr. p. 314 (1867) ; Gurney, in Andersson's B. Damaral. p. 280 (1872) ; Dresser, B. Eur. vi, p. 297, pl. 405 (1873) ; Ayres, Ibis, 1874, p. 104 ; Buckley, Ibis, 1874, p. 389 ; Oates, Matabeleland, p. 327 (1881) ; Holub & Pelzeln, Orn. Süd-Afr. p. 286 (1882) ; Butler, Feilden &

Reid, *Zool.* 1882, p. 423; *Sharpe*, *ed. Layard's B. S. Afr.* p. 728 (1884); *Seebold*, *Ibis*, 1887, p. 345; *Kirby*, *Haunts Wild Game* p. 559 (1896); *Bryden*, *Nat. and Sport*, p. 44 (1897); *Woodward Bros.*, *Natal B.* p. 199 (1899); *Haagner*, *Ibis*, 1902, p. 574; *Whitehead*, *Ibis*, 1903, p. 287.

Ciconia ciconia, *Shelley*, *B. Afr.* i, p. 159 (1896); *Sharpe*, *Cat. B. M.* xxvi, p. 299 (1898); *Reichenow*, *Vög. Afr.* i, p. 345 (1901).

"Great Locust Bird" of the English, "Springhaans Vogel" of the Dutch; "Ingolantete" of the Zulus (Woodward).

Description. *Adult male.*—General colour above and below white, the wings, including the primary coverts, primaries, secondaries and scapulars, black, with a slight greenish or purplish gloss. Iris brown; bill dark red; skin of pouch black anteriorly, red posteriorly; skin round the eye black; legs and feet reddish-pink, claws black.

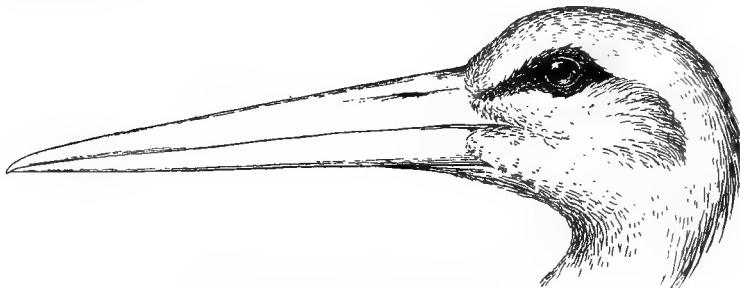


FIG. 11.—Head of *Ciconia alba*. $\times \frac{1}{3}$

Length about 46·0; wing 24·0; tail 10·0; culmen 7·0; tarsus 8·5; middle toe and claw 3·5.

The female resembles the male, and the young bird is like the adult, but has the wings browner and not so glossy. The length of the bill varies considerably, and in some specimens the inner wing-quills are powdered with slaty-grey, to a greater or lesser extent.

Distribution.—The White Stork is found throughout temperate Europe, from Spain to Germany and South Russia, extending eastwards to Turkestan, in all of which countries it breeds. In the British Isles it is only an irregular visitor. During the northern winter it retreats southwards to Africa and India.

Within our limits it is found most abundantly to the north of the Orange River, but its movements are everywhere somewhat irregular, depending to a great extent on the swarms of locusts on which it chiefly feeds.

The following are localities : Cape Colony—Cape div. (S. A. Mus.), Port Elizabeth, irregular visitor (Brown), King William's Town, irregular migrant (Trevelyan), Orange River, near Aliwal North, February (Whitehead), Delpoortshope, in Barkly West, in summer (Holub), Setlagoli, in Mafeking (Bryden); Natal—Upper Umkomas dist. (Woodward), Colenso, November (Reid), Newcastle, Upper Bushmans River and Mooi River, November, December (Sparrow); Transvaal—Limpopo River in large flocks (Buckley), Potchefstroom, rare (Ayres), near Johannesburg, common (Haagner), Lydenburg dist., in summer (Kirby); Bechuanaland—Lake Ngami (Andersson); Rhodesia—Ramaqueban River, near Tati, November (Oates), Feira on the Zambesi, December (Stoehr in S. A. Mus.); German South-west Africa—Ondonga and North Damaraland (abundant in rainy season), South Damaraland, occasionally (Andersson).

Habits.—One of the most familiar birds of Holland and Germany, where it enters abundantly into all popular songs and fables, the White Stork is in South Africa specially esteemed for its locust-devouring propensities. It usually arrives in October or November, in large flocks of 300 or 400 birds, which disperse over the country, and hunt for insects during the day, while at night they resort to tall trees, generally Yellow-woods, to roost. Together with the Wattled Starling (*Dilophus carunculatus*) and the Pratincole (*Glareola nordmanni*), they follow the flights of locusts and feed largely upon them, and in consequence of this their movements are very irregular.

No properly authenticated instance of the White Stork breeding in South Africa is known, though Mrs. Barber and Mr. Seebohm both give unconfirmed rumours on the subject. Major Sparrow, too, writes to me that in the upper part of Natal, where the bird is common in November and December, he has been told of the existence of nests of the species, though he has never found one himself.

In Holland and Germany the nest, which is built of sticks, and added to year after year, is usually placed on buildings, or often on old cart wheels set up for the use of the birds; the eggs, three to five in number, are pure white, and measure about $2\cdot8 \times 2\cdot1$.

579. *Ciconia nigra*. *Black Stork.*

Ardea nigra, Linn., *Syst. Nat.* i, p. 235 (1766).

Ardea chrysopelargus, A. A. H. Lichtenstein, *Cat. Rer. Nat. Rar. Hamb.*, p. 29 (1793).

Ciconia nigra, Layard, *B. S. Afr.* p. 315 (1867); Dresser, *B. Eur.* vi, p. 309, pl. 406 (1873); Holub & Pelzeln, *Orn. Sud-Afr.* p. 287 (1882);

Sharpe, ed. *Layard's B. S. Afr.* p. 729 (1884); *Ayres*, *Ibis*, 1886, p. 297; *Shelley*, *B. Afr.* i, p. 159 (1896); *Sharpe*, *Cat. B. M.* xxvi, p. 303 (1898); *Marshall*, *Ibis*, 1900, p. 267; *Alexander*, *ibid.*, p. 441; *Reichenow*, *Vög. Afr.* i, p. 346 (1901); *Haagner*, *Ibis*, 1902, p. 574.

Description.—*Adult male*.—General colour above dusky-brown to black, glossed with metallic copper and green, the former strongly predominating on the sides of the face and upper throat, the latter round the neck and on the mantle; below from the chest downwards, including the axillaries, white; under wing-coverts dusky brown. Iris brown; bill, naked skin round the orbit and of the pouch, coral red; legs and feet the same but darker in front of the tarsus.

Length about 46; wing 22·5; tail 9·75; culmen 7·0; tarsus 7·5; middle toe and claw 3·5. The female is less glossy than the male, and the orbital skin is lead coloured, not red. A young bird is browner than the adult, with hardly any metallic gloss; the head and neck are pale brown, with whitish-brown tips to the feathers.

Distribution.—The Black Stork has a somewhat wider distribution than its white cousin, as its range extends as far east as Mongolia and Northern China. In winter it migrates south to Africa and India.

In South Africa it is a somewhat rare bird, and does not appear to have been hitherto noticed in German South-west Africa. The following are localities: Cape Colony—Cape div., February and Touws River February (S. A. Mus.), Knysna and Nelspoort in Beaufort West (Layard), Port Elizabeth, fairly common (Brown), East London (Wood), Port St. John's, once seen (Shortridge), Linokana in Mafeking distr. (Holub); Natal—Mooi River, once seen in December (Sparrow); Transvaal—Potchefstroom, June, on one occasion (Ayres), near Johannesburg, rare (Haagner), Pienaars River (Pretoria Mus.); Rhodesia—Soa Salt Lake on Victoria Falls road (Holub), Mashonaland, rare (Marshall); Zambezi River (Alexander).

Habits.—The Black Stork is a more wary and less familiar bird than the White Stork; it is usually seen solitary or in small parties, though occasionally, probably when migrating, it is met with in larger flocks. It is fond of the mouths of tidal rivers along the coasts, where it finds plenty of small fishes, frogs and crabs, but it also feeds on insects in the drier country of the interior.

This Stork is a visitor to South Africa only during the southern summer, though Mr. Wood tells me he once came across one in midwinter (*i.e.* June); it is not known to breed within our limits.

Genus IV. ANASTOMUS.

*Type.***Anastomus** Bonn., *Enc. Méth. Orn.* p. 93 (1790) A. oscitans.

Bill stout and long, distinctly bowed along the culmen, and even more so from the genys to the tip, so that the cutting edges of the mandibles do not meet in the middle of their length; culmen distinctly longer than the tarsus; a small bare spot below the eye, and on the chin between the mandibles, otherwise the face and neck well clothed with feathers; legs short, tarsus considerably less than twice the length of the middle toe and claw.

This genus, which can be at once recognised by its curious bill, is found all over the Ethiopian region (including Madagascar) and India. Two species are generally recognised, though some authors consider the bird found in Madagascar as distinct, in which case the number is three.

580. **Anastomus lamelligerus.** African Open-bill.

Anastomus lamelligerus, Temm. *Pl. Col.* v, pl. 236 (1823); *Livingstone, Miss. Trav.* pp. 252, 494 (1858); *Layard, B. S. Afr.* p. 317 (1867); *Ayres, Ibis*, 1869, p. 302, 1871, p. 270; *Gurney, in Andersson's B. Damaral.* p. 288 (1872); *Butler, Feilden & Reid, Zool.* 1882, p. 423; *Holub & Pelzeln, Orn. Süd-Afr.* p. 289 (1882); *Sharpe, ed. Layard's B. S. Afr.* p. 732 (1884); *Fleck, Journ. Ornith.* 1894, p. 386; *Shelley, B. Afr.* i, p. 159 (1896); *Sharpe, Cat. B. M.* xxvi, p. 308 (1898); *Marshall, Ibis*, 1900, p. 268; *Reichenow, Vög. Afr.* i, p. 335 (1901). "Linongolo" in Zambesi Valley (Livingstone).

Description. Adult.—General colour above and below black, with a coppery, purple and green metallic gloss; the gloss is chiefly developed on the narrow stiffened plumes which clothe the mantle, wing-coverts, lower neck and breast; the shafts of the feathers of the breast are in addition prolonged into horny, flattened, stiff filaments.

Iris very dark brown with an inner ring of yellowish-brown; bill dusky, basal half whitish; sides of the mandibles with a series of oblique ridges.

Length 37; wing 17·5; tail 7·5; culmen 7·5; tarsus 5·5; middle toe and claw 4·5.

The sexes are alike; young birds are browner than the adults and have less gloss; the wing-coverts, dorsal plumes and feathers of the fore neck and chest have whitish-brown tips.

Distribution.—The Open-bill is found throughout tropical Africa and Madagascar from the Soudan and Abyssinia southwards. It does not seem to have been met with in the forest districts of the West Coast.

In South Africa this species is a very abundant resident along the Zambesi Valley and in the neighbourhood of Lake Ngami; south of this it is only a straggler. It has not hitherto been recorded from Cape Colony.

The following are ascertained localities: Natal—near Ladysmith, March (Feilden); Transvaal—Potchefstroom, February, twice, recorded (Ayres); Bechuanaland—Lake regions (Andersson), Nocana, July (Fleck); Rhodesia—Chobe River (Bradshaw in S. A. Mus.), Makabusi River near Salisbury, June (Marshall); German South-west Africa—Ondonga, resident (Andersson), Ovaquenyama, December (Eriksson in S. A. Mus.); Zambesi Valley (Kirk, Livingstone, Holub and Bradshaw).



FIG. 12.—Head of *Anastomus lamelligerus*. $\times \frac{2}{3}$

Habits.—This bird, remarkable alike for its curiously shaped bill which, owing to the bowed shape of the upper and lower mandible cannot be closed in its middle portion, and for the almost horny stiff projections of the metallic breast feathers, is found in marshy localities, especially along the banks of rivers; they are usually seen in considerable flocks on the Zambesi, where they spend their days in the shallows fishing, while at night they roost in the trees along the bank. They live on small fishes, frogs, crabs, and other water animals, but their favourite food consists of freshwater mollusca, especially those of the genus *Ampullaria*, the shells of which they crack with their powerful beaks. They breed in large societies among the reeds in the swamps between the Zambesi and the Chobe

Rivers; the localities are well known to the natives who collect the young for eating purposes. Livingstone relates how 175 unfledged birds were brought to him at Chitlane's village in the Upper Zambesi Valley, and that he found them very fat and delicious when roasted.

Genus V. EPHIPPIORHYNCHUS.

Type.

Ephippiorhynchus *Bp.*, *Consp. Av.* ii, p. 106 (1855) *E. senegalensis*.

Bill very long and strong, about the same length as the tarsus, with a flat frontal plate (the saddle) at the base of the culmen, which itself is straight and strongly compressed towards the tip; the line of the lower mandible bowed upwards beyond the genys; head and neck fully feathered except a narrow space round the eye and the lores; tail normal; legs very long, the tarsus about three times the length of the middle toe and claw; covered all round with elongated hexagonal shields.

Only one species, confined to the Ethiopian Region, is assigned to this genus.

581. **Ephippiorhynchus senegalensis.**

Saddle-bill, or African Jabiru.

Mycteria senegalensis, *Shaw*, *Trans. Linn. Soc.* v, p. 35, pl. 3 (1798); *Gurney*, *Ibis*, 1862, p. 34, 1865, p. 275 [Natal]; *Kirk*, *Ibis*, 1864, p. 333; *Layard*, *B. S. Afr.* p. 317 (1867); *id. Ibis*, 1869, p. 376; *Holub & Petzelin*, *Orn. Süd-Afr.* p. 288 (1882); *Shelley*, *Ibis*, 1882, p. 365 [Mashonaland]; *Sharpe*, *ed. Layard's B. S. Afr.* p. 731 (1884); *Ayres*, *Ibis*, 1886, p. 297; *Shelley*, *B. Afr.* i, p. 159 (1896); *Woodward Bros.*, *Natal B.* p. 200 (1899); *Millais*, *Breath from the Veldt*, 2nd ed., p. 214, with sketch (1899); *Marshall*, *Ibis*, 1900, p. 268; *Alexander*, *Ibis*, 1900, p. 441.

Ephippiorhynchus senegalensis, *Gurney*, in *Andersson's B. Damaral.* p. 281 (1872); *Sharpe*, *Cat. B. M.* xxvi, p. 312 (1898); *Reichenow*, *Vög. Afr.* i, p. 341 (1901); *Oates*, *Cat. B. Eggs*, ii, p. 108 (1902).

Description. *Adult.*—Head and neck all round, wing-coverts (except the primary and some of the least marginal coverts), inner secondaries, scapulars, upper tail-coverts and tail black, washed with metallic gloss; base of the tail-feathers white; centre of the back and the upper tail-coverts, and below from the fore neck to the under tail-coverts pure white; primaries, outer secondaries and

primary coverts white, washed with ashy, especially along the inner webs and at the tips.

Iris brown in the male, bright yellow in the female; bill from the base to the nostril and for the distal third, bright crimson, the median portion black; frontal shield (*i.e.*, saddle) above the nostrils, bright yellow; skin round the eye and under the bill as also the two little dependent fleshy lappets, bright crimson; legs black, the tarsal joint (knee) and toes brick dust red; a bare spot on the breast bright crimson.

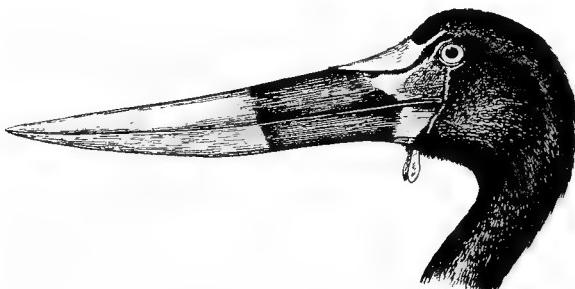


FIG. 13.—Head of *Ephippiorhynchus senegalensis*. $\times \frac{1}{3}$

Length 57·0; wing 26·5; tail 10·75; culmen 13·5; tarsus 13·0; middle toe and claw 4·25. The young bird is browner than the adult, and the white of the mantle and chest is washed with brown.

Distribution.—The Saddle-bill is found all over tropical Africa, from the Gambia on the west and the Upper Nile Valley and Abyssinia in the east southwards.

This Stork is everywhere in South Africa a somewhat rare bird, though perhaps more often met with towards the Zambesi. The following are recorded localities: Cape Colony—Kleinmont River in Bathurst district (only once seen, Layard); Natal—(very rare, Ayres, and Woodward); Transvaal—Rustenburg, April (once obtained, Ayres); Rhodesia—Matabeleland (Exton in S. A. Mus.), Nata River in West Matabeleland, June (Holub), near Salisbury (Marshall), lower Nuanetsi River (Millais); German South-west Africa—Ondonga and New Barmen (Andersson); Portuguese East Africa—Lower Zambesi (Kirk and Alexander), Inhambane (Millar), near Delagoa Bay (Layard).

Habits.—Little has been recorded about the habits of the

Saddle-bill; Ayres states that it is a scarce bird in Natal,* though a pair may occasionally be seen at low water on the mud banks in the centre of the bay, and they also frequent the lagoons and marshes at the mouths of rivers; when a pair are feeding together they sometimes stop suddenly and skip or dance round and round in a small circle, then stop and bow to each other and again resume their quaint dance. Their food consists of fishes, frogs, crabs and shrimps, and they are generally seen in pairs, though Millais states that he saw a very large number all together on the Lower Nuanetsi in the south-east corner of Rhodesia.

This Stork is not definitely known to breed in South Africa, but there are eggs of it in the British Museum said to have come from South Africa; they are dull white, slightly glossy, coarse in texture and covered with minute pores; they measure about 3·05 x 2·23.

Mr. Millar came across a number of these Storks in the lower Zambesi valley; they frequent pans and are also found in the open plains, but are shy and difficult to approach. Their flight is generally low, though they sometimes circle to a great height in the air. They become easily domesticated and readily catch food, when thrown to them, with their enormous bills.

Genus VI. LEPTOPTILUS.

Type.

Leptoptilos Lesson, *Traité d'Orn.*, p. 583 (1831) ... L. javanicus.

Bill large and stout but with no marked "saddle" plate as in *Ephippiorhynchus*, the culmen straight throughout and the line of the lower mandible but slightly upcurved beyond the genys; whole head and neck and the upper median portion of the breast bare of feathers, but sometimes covered, especially in young birds, with a sparse woolly down; from the lower part in the fore-neck depends a pouch of skin, the interior of which is in communication with the air-sac system, and can be inflated at the will of the bird; the pouch is not connected with the crop in any way; tail-feathers normal, under tail-coverts composed of some downy plumes; legs long, tarsus about the same length as the bill and more than twice the length of the middle toe and claw, covered with elongated hexagonal scales all round.

* Mr. Millar tells me he has never seen it or even heard of it in Natal of late years.

The range of this genus includes the Ethiopian and Oriental regions extending to Southern China and Borneo. Three species are generally recognised, only one of which is found within our limits.

582. *Leptoptilus crumeniferus*. *Marabou*.

Ciconia argala, (*nec Lath.*), *Temm. Pl. Col.* v. pl. 301 (1824).

Leptoptilos crumenifera, *Less.*, *Traité d'Orn.* p. 585 (1831); *Layard, B. S. Afr.* p. 316 (1867); *Gurney, Ibis*, 1868, p. 259; *id. in Andersson's B. Dammaral.* p. 282 (1872); *Holub & Pelzeln, Orn. Süd-Afr.* p. 287 (1882); *Shelley, Ibis*, 1882, p. 365 [Umvuli River]; *Sharpe, ed. Layard's B. S. Afr.* p. 734 (1884); *W. Ayres, Ibis*, 1887, p. 63; *Fleck, Journ. Ornith.* 1894, pp. 361, 386; *Kirby, Haunts of Wild Game*, p. 559 (1896); *Sharpe, Cat. B. M.* xxvi, p. 319 (1898); *Woodward Bros., Natal B.* p. 201 (1899); *Marshall, Ibis*, 1900, p. 268; *Reichenow, Vög. Afr.* i, p. 338 (1901).

Leptoptilus argala, *Shelley, B. Afr.* i, p. 159 (1896).

Description.—*Adult*.—Head and neck, as far as the shoulders and centre of the breast and projecting pouch, bare of feathers; general colour above black with metallic reflections, the greater coverts, inner secondaries and scapulars with white margins; below white throughout.

Iris brown; bill dirty green; bare skin of the head and neck dirty yellowish; legs black, covered with a fine, ashy powder.

Length 40·0; wing 29·0; tail 11·8; culmen 10·8; tarsus 11·0; middle toe and claw 4·5.

These measurements are presumably those of a female, the male appears to be slightly larger—wing 31·0; tail 14·0. Young birds have a smaller bill and the hind part of the head and neck are clothed more or less with woolly down, with sometimes remains of a few feathers; the edging to the coverts and secondaries is light brown or whitish, and much less marked than in the adults.

Distribution.—The Marabou is spread over tropical Africa from the Gambia in the west, and from Khartoum on the Nile in the east, southwards. Within our limits it is found commonly only along the Zambesi Valley and in the neighbourhood of Lake Ngami, though stragglers have been reported from further south from time to time.

The following are ascertained localities: Cape Colony—Zwart-kei River in Queenstown division (once obtained by Bowker and Layard);

Natal—Escourt in 1894 (Durban Museum); Transvaal—near Pretoria, Mallabas on the Limpopo River and Rooi-rand, June (W. Ayres), Lydenburg district, not uncommon (Kirby); Bechuanaland—Lake Ngami, resident (Andersson), in June (Fleck); Rhodesia—Chobe swamps (Holub), Umfuli River, October (Ayres); German South-west Africa—Ondonga and Damaraland, plentiful in the rains (Andersson).

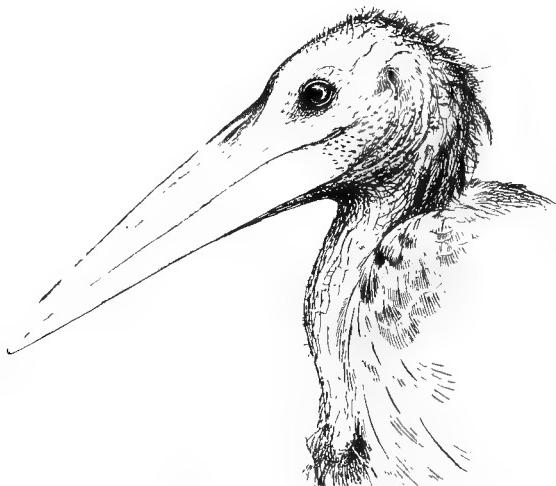


FIG. 14.—Head of *Leptoptilus crumeniferus*. $\times \frac{1}{5}$

Habits.—The Marabou, which is closely allied to the well-known Adjutant of India, is a Stork which has adopted, to a large extent, the habits of a Vulture. It appears where carrion is to be found, and shares with the Vultures and Ravens in their loathsome meal. It generally alights on a tree on its arrival on the scene, and is powerful enough to hold its own with its competitors, chiefly owing to its strong, sharp-pointed beak. It does not rely, however, entirely on these sources for its food, but devours fishes, crabs and insects of various kinds as well. The curious pouch in front of the neck has nothing to do with the crop or digestive apparatus of the bird, but is connected with the air-sac and lungs; it can be inflated at the will of the bird, and often reaches a considerable size.

The Marabou is a rare bird everywhere in South Africa, and in consequence its habits and curious attitudes and ways are not familiar to the inhabitants as are those of the Adjutant in India;

but it often stands for considerable periods with its legs either perpendicular or slightly straddled, its back almost in a straight line and its head retracted down between its shoulders. When in this position it has a ridiculous resemblance to an old gentleman standing with his back to the fire, and in consequence it has been frequently made use of by artists in caricature.

Andersson writes as follows : "It is usually seen in flocks, sometimes on the ground, and at others perched on trees. It will remain for hours in the same position with one foot drawn up under its body, and a number of individuals seen in this attitude through the fantastic medium of a mirage, present a singular and ridiculous appearance. It is a true scavenger, feeding on carrion as well as on the most offensive offal; but it also captures living prey, such as fishes, tortoises and snakes."

Mr. W. Ayres met with the Marabou near Pretoria, just after the first Boer War ; they came to feed on the dead mules and cattle lying about the camp. Like other Storks the Marabou has no voice organs or voice, but makes a clattering sound by rapidly opening and closing its beak.

The Marabou gives its name to the beautiful soft white feathers so-called ; they come from the under tail-coverts of the bird, and are obtained not only from the present species, but also from the Indian Adjutant.

So far as I am aware, the Marabou has not been known to nest within our limits. Fischer, the German collector and naturalist, found a breeding place in East Africa near Kilimanjaro ; the nests, about thirty in number, were built in the highest trees of the band of forest along a river. The eggs are oval, white, and without gloss, measuring about 3·25 x 2·20.

Genus VII. PSEUDOTANTALUS.

	<i>Type.</i>
Pseudotantalus Ridgway, Proc. U. S. Nat. Mus. v. p. 550 (1883).....	P. ibis.

Bill smooth and long, slightly exceeding the tarsus in length ; the culmen rounded, not ridged and distinctly decurved at the tip ; lower mandible slightly concave between the genys and the tip ; nostrils quite at the base of the bill, oval, and opening into a groove ; crown, occiput, sides of the face and throat bare of feathers, but not the neck ; tail normal ; legs long, the tarsus about twice the

length of the middle toe and claw, covered with elongate hexagonal scales.

Three species of this genus have been described, one ranging over Africa, and two over Southern Asia as far as China and the Malayan Islands.

583. *Pseudotantalus ibis*. Wood Ibis.

Tantalus ibis, *Linn. Syst. Nat.* 12th ed. i, p. 241 (1766); *Kirk, Ibis*, 1864, p. 334; *Layard, B. S. Afr.* p. 318 (1867); *Gurney in Andersson's B. Damaral.* p. 296 (1872); *id. Ibis*, 1873, p. 256 [Durban Harbour]; *Barratt, Ibis*, 1876, p. 211; *Holub & Pelzeln Orn. Süd-Afr.* p. 290 (1882); *Bryden, Gun and Camera*, p. 408 (1893); *Fleck, Journ. Ornith.* 1894, p. 386; *Shelley, B. Afr.* i, p. 160 (1896); *Woodward Bros. Natal B.* p. 202 (1899); *Reichenow, Vög. Afr.* i, p. 333 (1901).

Pseudotantalus ibis, *Sharpe, ed. Layard's B. S. Afr.* p. 735 (1884); *id. Cat. B. M.* xxvi, p. 327 (1898).

Description.—*Adult*.—General colour above white, with a rosy wash throughout; the wing-coverts with a strong subterminal bar of crimson-lake as well; primaries, their coverts, secondaries and tail black, strongly glossed with metallic green; crown of the head, sides of the face and throat bare of feathers; neck all round and under parts throughout white; the axillaries and under tail-coverts white tinged with pink, while the under wing-coverts are much more strongly marked with a rich crimson subterminal band.

Iris brown; bill golden-yellow; bare parts of the face red, with a narrow border of yellow; feet brick-red, toes black.

Length about 46·0; wing 21·0; tail 7·0; culmen 9·5; tarsus 8·5; middle toe and claw 4·5.

In the young bird the back, wings and neck are brown, and the bare part of the face is yellow.

Distribution.—The Wood Ibis is found throughout tropical Africa from the Gambia and Nubia southwards. It also inhabits Madagascar.

It is a rare bird south of the Zambesi, and is apparently only a straggler from the north, but it is not uncommon along that river and its affluents, and in the districts about Lake Ngami.

The following are recorded localities; Cape Colony—Knysna, February (Stark), Port Elizabeth, rare (Brown), Sterkstroom (Albany Mus.), Nelspoort, in Beaufort West, twice procured (Layard); Natal—Durban Harbour (Ayres); Transvaal—Brakfontein in Marico

district (Holub), Potchefstroom (Barratt) ; Bechuanaland—Lake region, common resident (Andersson), Botletli River (Bryden) ; German South-west Africa—Damaraland, scarce (Andersson), Hoaseb, on Nosob River, April (Fleck) ; Zambesi Valley (Kirk and Bradshaw in Bt. Mus.).

Habits.—The Wood Ibis is found along rivers and streams where there are mud or sand banks, on which it searches for its food. It also wades in shallow water for the same purpose. It is usually seen in small parties, and is a rare bird.

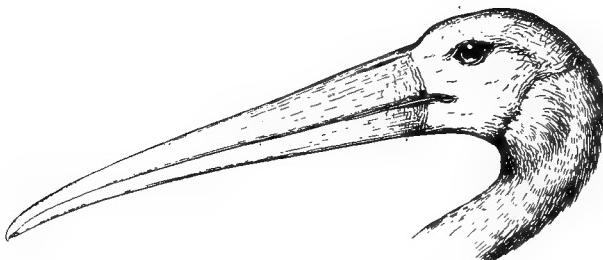


FIG. 15.—Head of *Pseudotantalus ibis*. $\times \frac{1}{4}$

Dr. Stark met with this species at Knysna, in February, 1897, and the following account is taken from his note-book : “ On the flats, and in the shallow water left at low tide in Knysna Bay, I noticed nearly every day seven or eight Wood Ibises. They are conspicuous birds, from their size and glistening white plumage. Their long yellow beaks and the bright red skin of the anterior part of the face are also visible at a great distance. On the 26th I saw nineteen of these birds together (including four young of the year, known by their greyish-brown plumage), wading about nearly up to their bellies in water, and often with the entire beak and head submerged. On two occasions I noticed a fishing and wading bird stretch out one wing to give a shade on the water, after the manner of a Heron. Their flight is Stork-like, with neck and legs out-stretched, and somewhat heavy and slow. On another occasion I saw some of these birds fishing in shallow water overgrown with grass and weeds ; they stuck their widely-opened mandibles among the weeds, and felt about apparently with their tongues. The birds were all comparatively tame, and were often feeding within one hundred yards of the village.”

Family II. SCOPIDÆ.

The external characters of the family will be found under the description of the unique genus; in its anatomical characters it is somewhat intermediate between the Storks and Herons. The cervical vertebræ are sixteen in number; the syrinx is typical and provided with intrinsic muscles; there are no powder-down patches; the hind toe is on the same plane as the others; of the five Garrodian thigh muscles, the femorocaudal, semitendinosus and accessory semitendinosus alone are present.

Genus I. SCOPUS.

Type.

Scopus *Gmel.*, *Syst. Nat.* i, p. 618 (1788) *S. umbretta*.

Bill stout and strong, the culmen narrow and ridged, with the nasal groove extending along its whole length; the line of the culmen straight, decurved only at the tip; lores fully feathered; ten primaries, twelve tail feathers; lower half of the tibia bare of feathers; tarsus longer than the middle toe and claw, covered with hexagonal scales; a well developed basal web between the three front toes, that between the middle and outer toe largest; claw of the middle toe pectinated on the inner side.

Only one species is known, spread over the whole of the Ethiopian region, including Southern Arabia and Madagascar.

584. **Scopus umbretta.** *Hammerkop.*

Scopus umbretta, *Gmel.*, *Syst. Nat.* i, p. 618 (1788); *Grill*, *K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 55 (1858) [Knysna]; *Gurney*, *Ibis*, 1859, p. 248 [Natal]; *Kirk*, *Ibis*, 1864, p. 333; *Layard*, *B. S. Afr.* p. 312 (1867); *Ayres*, *Ibis*, 1871, p. 265, 1880, p. 268; *Gurney*, in *Andersson's B. Damaral.* p. 294 (1872); *Buckley*, *Ibis*, 1874, p. 389; *Shelley*, *Ibis*, 1875, p. 86; *Oates*, *Matabeleland*, p. 327 (1881); *Holub* & *Pelzeln*, *Orn. Süd-Afr.* p. 277 (with figs. of head, nest and skeleton) (1882); *Shelley*, *Ibis*, 1882, p. 364 [Mashonaland]; *Butler*, *Feilden* & *Reid*, *Zool.* 1882, p. 344; *Sharpe*, ed. *Layard's B. S. Afr.* p. 725 (1885); *Fleck*, *Journ. Ornith.* 1894, p. 387; *Shelley*, *B. Afr.* i, p. 159 (1896); *Rendall*, *Ibis*, 1896, p. 176; *Woodward Bros.*, *Ibis*, 1897, p. 415; *id.* *Natal B.* p. 199 (1899); *Sharpe*, *Cat. B. M.* xxvi, p. 288 (1898); *Marshall*, *Ibis*, 1900, p. 267; *Alexander*, *Ibis*, 1900, p. 441; *Haagner*, *Ibis*, 1901, p. 193, 1902, pp. 574, 581; *Harris*, *Essays*

and Photographs, p. 146, pl. 38 [nest] (1901); *Reichenow, Vög. Afr.* i, p. 353 (1901); *Hellmayr, Journ. Ornith.* 1902, p. 236 [Pienaar River]; *Whitehead, Ibis*, 1903, p. 237; *Oates, Cat. B. Eggs*, ii, p. 109 (1902); *Sharpe, Ibis*, 1904, p. 16 [Deelfontein]; *Shortridge, Ibis*, 1904, p. 206.

“Hammerkop” or sometimes “Paddevanger” (*i.e.*, Toad-catcher) of the Dutch; “Mudlark” of Natal Colonists; “Utekwane” of the Amaxosa (Stanford); “Itegwana” of the Zulus (Woodward); “Machanoka” in the Transvaal (Penthal).

Description. *Adult.*—General colour above sepia brown with here and there slight traces of a purplish gloss; a noticeable crest on the nape; the feathers about three inches long; wing-quills darker than the back with a stronger purplish gloss; tail also somewhat glossy, paler with a broad darker subterminal band and six or seven narrow, rather irregular, transverse bands above; below brown throughout, rather paler than the back, under tail-coverts barred with darker.

Iris dark brown; bill and legs black.

Length of a male (in the flesh) 22·25; wing 12·75; tail 6·70; culmen 3·30; tarsus 3·0; middle toe and claw 2·35.

The female resembles the male in plumage and measurements. The nestling is covered with white down with a slight greyish tinge on the back.

Distribution.—The Hammerkop is found throughout the whole of Africa from Senegal and Abyssinia southwards as well as in Arabia and Madagascar. It appears to be a resident everywhere.

In South Africa this bird is abundant throughout the country from near Cape Town to the Zambesi, as is shown in the following list of recorded localities. Cape Colony—Cape, Malmesbury, Caledon, Hanover, Middelburg and Pondoland divisions (S. A. Mus.), Knysna (Victorin), Nelspoort in Beaufort West, breeding (Layard), Deelfontein (Seimund), Orange River, near Aliwal North (Whitehead), Port Elizabeth and East London (Rickard); Natal—near Durban (Shelley), near Maritzburg (Bt. Mus.), Ladysmith and Newcastle (Butler), Zululand (Woodward); Orange River Colony—Vredefort Rd. (B. Hamilton); Basutoland, common (W. L. Sclater), Transvaal—Potchefstroom (Ayres), Pienaar River Bridge in Pretoria district (Penthal), near Johannesburg (Haagner), Barberton (Rendall); Bechuanaland—Makalapsi River (Oates); Rhodesia—Zambesi at Victoria Falls (W. L. Sclater), near Salisbury (Marshall); German South-west Africa—Damaraland and Namaqualand (Andersson); Portuguese East Africa—Chicowa on the Zambesi (Alexander).

Habits.--This singular bird, remarkable alike for its habits and its structure is fairly common throughout South Africa and is a resident species. It is generally seen solitary or perhaps occasionally in pairs, and never far from water either of rivers or lakes. Here it can often be observed standing motionless and meditative with its head drawn down somewhat between its shoulders; its food consists of water insects, frogs, and small fishes, which it obtains



FIG. 16.—*Scopus umbretta*.

by searching along the shallows of the rivers and marshes. It is chiefly seen at dusk and rises with a somewhat laboured flight, giving utterance to a harsh, metallic note; when two or three meet together they often go through a number of weird gambols; Marshall describes meeting three of them solemnly dancing round one another bowing and flapping their wings and exhibiting all sorts of strange antics, which were all the more ludicrous in so stolid-looking a bird; they are much attached to particular localities and seem to remain there for many years.

The nest has often been described; it is figured by Holub, while Harris reproduces in his Sketches a photograph of one taken by him. It is a huge structure composed of sticks and twigs, often with reeds and grass all cemented together with mud; sometimes it is placed on the ground, usually on the side of a krantz or in some very inaccessible spot, sometimes in a tree, generally low down, but always near water; the entrance is on the most inaccessible side and leads by a narrow passage into a small rounded central chamber plastered with mud; the outside is often ornamented with stones, old tins, bones, and other objects. Haagner measured one which was a yard and a half in diameter across the top and a yard in height; it was more or less flat on the top and pointed below and somewhat dome shaped, and so strongly constructed that he was able to stand upon the top without causing any damage.

The usual number of eggs is four, laid generally in October, but sometimes earlier; Captain Reid obtained his on May 30; there is a clutch of four in the South African Museum taken by Major Sparrow, at Waschbank, in Natal, on October 9; they are white and slightly chalky, without any gloss but quite smooth; they measure about $1\cdot80 \times 1\cdot40$.

Family III. ARDEIDÆ.

This family is a large one, containing the Herons, Egrets, Bitterns, and their allies. The bill is slender and straight, with the usual groove, and is generally notched at the tip; there are eleven primaries, and the number of the rectrices varies from eight to twelve; the hind toe is on a level with the others; between the outer and middle toes there is a broad basal web, which is nearly obsolete between the other two; the claw of the middle toe is pectinated; the eggs are generally blue; the young when hatched are covered with hairy down, and are fed for some time by the parents.

Anatomical characters are as follows:—From eighteen to twenty cervical vertebræ; skull holorbinal; angle of the mandible not produced beyond the articulation of the quadrate; syrinx with intrinsic muscles; two fused carotids; femorocaudal, semitendinosus and accessory semitendinosus muscles present, the first named occasionally wanting; four to six powder-down patches. The key of the genera will be found on p. 29.

Genus I. ARDEA.

Type.

Ardea Briss. *Orn.* v, p. 391 (1760)..... A. cinerea.

Bill long, straight and pointed, at least two-thirds the length of the tarsus; grooved on the sides of the upper mandible; nostrils elongated slits towards the base of the groove; a bare space from the base of the bill to the eye; wings long, but the primaries not longer than the secondaries; tail short, nearly square, of twelve feathers; legs long, lower third at least of the tibio-tarsus bare of feathers, the bare portion exceeding the inner toe and claw; tarsus scutellated in front; head crested, feathers at the base of the neck and on the scapular region, elongated to form ornamental plumes.

Sharpe has recently placed the Purple Heron in a separate genus, under the title of *Phoyx*, on account of the shortness of its tarsus, and the length of the claw of the hallux. The old arrangement has here been retained, and under these circumstances the genus contains some eleven species spread over the greater portion of the Earth's surface. Four of them inhabit Africa.

Key of the Species.

- A. Of large size, wing over 20; crown, nape and sides of the neck rufous *A. goliath*, p. 55.
- B. Of intermediate size, wing about 18; crown, back and sides of the neck white, sides of the head, nape and crest black *A. cinerea*, p. 58.
- C. Of small size, wing under 16.
 - a. Crown, nape and sides of the neck black .. *A. melanocephala*, p. 60.
 - b. Crown, nape and back of the neck black, sides of the neck rufous *A. purpurea*, p. 62.

585. **Ardea goliath.** *Goliath Heron.*

Ardea goliath, Cretzschm., in Rüpp. *Atlas*, p. 39, pl. 26 (1826); Gurney, *Ibis*, 1860, p. 220, 1868, p. 256 [Natal]; Kirk, *Ibis*, 1864, p. 832; Layard, *B. S. Afr.* p. 305 (1867); *id. Ibis*, 1869, p. 376; Gurney, in Andersson's *B. Damara*, p. 285 (1872); Ayres, *Ibis*, 1873, p. 288, 1877, p. 349; Barratt, *Ibis*, 1876, p. 193; Butler, *Stray Feathers*, x, p. 149 (1881); Holub & Pelz., *Orn. Süd-Afr.* p. 273 (1882); Butler, Feilden and Reid, *Zool.* 1882, p. 343; Shelley, *Ibis*, 1882, p. 363 [Mashonaland]; Sharpe, ed. Layard's *B. S. Afr.* p. 707 (1884); Fleck, *Journ. Ornith.* 1894, p. 387; Shelley, *B. Afr.* i, p. 157 (1896); Sharpe, *Cat. B. M.* xxvi, p. 66 (1898); Woodward bros.,

Natal B. p. 196 (1899); *Alexander, Ibis*, 1900, p. 440; *Reichenow, Vog. Afr.* i, p. 376 (1901); *Oates, Cat. B. Eggs*, ii, p. 112 (1902).

Description.—*Adult.*—Crown of the head, back and sides of the neck rich rufous brown; chin and throat white; a black band, narrow above, becoming wider below along the front of the lower half of the neck, the feathers lower down mottled black and white, and elongated into narrow dependent plumes; back, wings, tail and sides of the lower neck and of the breast slaty, some of the feathers of the back and breast elongated and produced; edge of the wing varied with white and rufous; whole of the under parts rich maroon.

Iris bright gamboge yellow; bill black, lower part of the lower mandible pale horny, skin round the eye yellowish-green; legs and feet black. Length 53; wing 22·5; tail 9·0; culmen 6·5; tarsus 8·0; middle toe 5·75.

The young bird is much duller than the adult; the wing-coverts are all tipped with rusty rufous; the breast is white, broadly streaked with rusty edges to the feathers.

Distribution.—The Goliath is found throughout the greater part of Africa from Senegal in the west and from the neighbourhood of Suakim in the east, southwards to Cape Colony. It has also been met with in Madagascar. It has only once been obtained in India, many years ago, and twice in Ceylon.

In South Africa it is nowhere common, though generally distributed in suitable localities. It appears to be plentiful near Potchefstroom, where several observers have seen or obtained specimens.

The following are localities: Cape Colony—Zoetendals vlei, in Bredasdorp (reported by Verreaux and Atmore), near East London, October (Wood), near Port St. Johns (Shortridge), Orange River near Upington (Bradshaw); Natal—Durban Harbour (Ayres and Gordge), Ifafa (Woodward), Newcastle district, breeding October, (Butler and Reid); Transvaal—near Potchefstroom, in Mooi River swamps (Arnot in S. A. Mus., Barratt, Ayres and Roberts); Bechuanaland—Botletli River and Lake Ngami (Andersson); Rhodesia—Chobe River swamps (Bradshaw), Mashonaland, only seen (Ayres); German South-west Africa—Okavango River and Damaraland, in rains (Andersson); Portuguese East Africa—Zambesi (Alexander and Kirk).

Habits.—This bird, the largest and finest of all the world's Herons, is not gregarious, and is generally seen singly or in pairs; it haunts the mouths of the rivers and bays along the coast, and is

only found inland where fair-sized pieces of water exist ; it appears to feed chiefly, at any rate, on fishes, which it obtains by wading, often in fairly deep water, up to its body, transfixing them with its powerful beak ; Ayres found a two-pound Catfish (*Clarias*) in the stomach of one individual. When gorged it retires to digest, resting in Durban Harbour on the ground under the mangrove trees. It has a strong, hoarse, croaking voice, somewhat resembling the barking of a dog.



FIG. 17.—Nest and eggs of *Ardea goliath*, from a photograph by
Mr. Austen Roberts.

Colonel Butler and Captain Reid found the Goliath nesting in a swamp near the junction of the Ingagane and Buffalo Rivers on the Utrecht side of the river on October 17th. The nest was placed upon the top of a patch of green sedge beaten down by wind and rain in the centre of the vlei ; it was raised about two feet above the level of the water, and was composed of dry sedge and reeds, it was about two feet in diameter and very flat on the top ; at the time

the male was on the nest, which contained three fresh eggs. Mr. Austen Roberts, of Potchefstroom, has recently sent a clutch of three eggs of this Heron to the South African Museum; these were taken at Kromdraai, on the Vaal River, near Potchefstroom, on October 3rd. In this case the nest, a photograph of which is here reproduced (Fig. 17), was built on the branch of a tall thorn tree overhanging the river about fifty feet above the ground, and was flat and composed of sticks throughout.

The eggs, which are oval and nearly equally rounded at both ends, are pale blue, without any markings, and measure 2·80 × 2·0.

586. *Ardea cinerea*. *Grey Heron.*

Ardea cinerea, Linn., *Syst. Nat.* 12th ed. i, p. 236 (1766); *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 55 (1858); *Gurney, Ibis*, 1859, p. 248, 1860, p. 205 [Natal]; *Layard, B. S. Afr.* p. 306 (1867); *id. Ibis*, 1869, p. 376; *Gurney, in Andersson's B. Danaral.* p. 284 (1872); *Buckley, Ibis*, 1874, p. 390; *Shelley, Ibis*, 1875, p. 86; *Dresser, B. Eur.*, vi, p. 207, pl. 395 (1875); *Ayres, Ibis*, 1877, p. 349; *Holub & Pelz., Orn. Süd-Afr.* p. 261 (1882); *Butler, Feilden & Reid, Zool.* 1882, p. 343; *Sharpe, ed. Layard's B. S. Afr.* p. 708 (1884); *Symonds, Ibis*, 1887, p. 335; *Fleck, Journ. Ornith.* 1894, p. 387; *Shelley, B. Afr.* i, p. 157 (1896); *Sharpe, Cat. B. M.* xxvi, p. 74 (1898); *Woodward Bros., Natal B.* p. 195 (1899); *Marshall, Ibis*, 1900, . 266; *Reichenow, Vög. Afr.* i, p. 379 (1901); *Sharpe, Ibis* 1904, p. 17 [Deelfontein]; *Shortridge, Ibis*, 1904, p. 205.

Description. *Adult male.*—Crown and forehead, face and neck all round, including the drooping plumes at the base of the neck, white; a broad black patch from behind the eye meets its fellow on the other side and separates the crown from the face; this patch ends in a nape crest and has two much elongated nuchal plumes; along the front of the neck for its lower two-thirds is a double series of elongate black patches; general colour above pale pearly-slate, becoming almost white on the decomposed and elongated scapulars, and also on the wing-coverts; wing-quills and primary coverts dark slate; edge of the wing white; tail like the back; on each side of the breast a patch of drooping purplish black feathers, continued back to about the vent, centre of the breast, abdomen, under tail-coverts and thighs white; sides of the body, axillaries and under wing-coverts pearly-slate.

Iris yellow; naked skin round the eye yellowish; bill yellow with a greenish tinge; legs and feet greenish-yellow.

Length (in the flesh) 40·5; wing 18; tail 6·5; culmen 4·5; tarsus 6·25; middle toe 4·0.

The female is nearly similar, but, as a rule, the crest feathers are not so long, though this is hardly the case in a breeding female recently acquired by the South African Museum. The young bird is darker and the colours are not so well defined, the crown and the back of the neck are slaty and the black band surrounding the crown is hardly defined; the decomposed plumes are absent from the fore-neck and scapulars, and the black patch on each side of the crop hardly developed.

Distribution.—The Grey Heron is a widely-spread and common bird throughout the greater part of its range, which is very extensive, including the whole of the Old World up to about 60° N. Lat.; it is to be met with in most parts of Africa, including Madagascar; while within our limits it is common nearly everywhere, and appears to be generally a resident throughout the year.

The following are recorded localities: Cape Colony—Cape division, very common (W. L. Slater), Knysna, June (Peddie), Port St. John's, January, Hanover, breeding September (S. A. Mus.), Deelfontein (Seimund), Berg River, breeding September (Kotze), Fairfield in Caledon, breeding (A. van der Byl), Malopo Valley near Mafeking (Holub); Natal—Durban Harbour (Gordge), Maritzburg (Fitzsimmons), Newcastle (Butler); Orange River Colony—Vredefort Road (B. Hamilton); Transvaal—near Potchefstroom, breeding September (Roberts), Limpopo Valley (Buckley); Rhodesia—Salisbury district (Marshall); German South-west Africa—along the coast to Walvisch Bay and Ondonga (Andersson), Nocana, July, Doornfontein, March Aris, January, and Kalahari, April (Fleck.)

Habits.—The Grey Heron in South Africa is generally to be seen singly, or perhaps a pair together standing motionless for hours in some shallow vlei waiting and watching for an opportunity of securing a fish or some other dainty morsel; if disturbed it rises with slowly flapping wings, the neck drawn back in S shape and the legs trailing behind, and leisurely makes its way to some more retired spot. Though generally reputed to be shy, the Grey Heron can hardly be said to be so on the Cape Flats, where it is often to be seen in the early morning. The food consists chiefly of fishes, but it also devours frogs, lizards, an occasional snake,

as well as insects and sometimes even small mammals. Its cry is a harsh "kronk." Contrary to its usual habits in Europe, it nests in South Africa as a rule on the ground in reed beds, and not in trees; the nest itself is made of reeds, and sometimes there are a number of pairs all nesting in the same place. Layard received eggs from the Berg River, where Mr. Kotze found them in September, and also from Fairfield, in the Caledon district, from Miss A. van der Byl. Dr. Stark found two nests in February on a little island, chiefly tenanted by Duikers, just outside the Knysna heads; they contained young birds nearly full grown. The eggs are usually three or four in number, and are, like other herons' eggs, pale blue in colour, and nearly equally rounded at both ends; they measure about $2\cdot25 \times 1\cdot75$.

Mr. Roberts, of Potchefstroom, tells me that he found a nest of this bird in a tree on the banks of the Vaal River on September 5th; it contained two fresh eggs. The tree was the same as that in which the Goliath's nest was found.

587. *Ardea melanocephala*. Black-headed Heron.

Ardea melanocephala, Vig. & Childr., in Denh. and Clapp. Voy. p. 201 (1826); Gurney, in Andersson's *B. Damaral*, p. 284 (1872); Oates, *Matabeleland*, p. 326 (1881); Butler, *Fcilden*, and Reid, *Zool.* 1882, p. 343; Sharpe, ed. Layard's *B. S. Afr.*, p. 709 (1884); Ayres, *Ibis*, 1886, p. 293; W. Ayres, *Ibis*, 1887, p. 62; Shelley, *B. Afr.* i, p. 157 (1896); Sharpe, *Cat. B. M.* xxvi, p. 70 (1898); Alexander, *Ibis*, 1900, p. 440; Reichenow, *Vög. Afr.* i, p. 380 (1901); Oates, *Cat. B. Eggs* ii, p. 113 (1902); Sharpe, *Ibis*, 1904, p. 17 [Deelfontein]; Shortridge, *Ibis*, 1904, p. 205.

Ardea atricollis, Wagl., *Syst. Av. Ardea*, sp. 4 (1827); Smith, *Ill. Zool. S. A. Aves*, pl. 86 (1843); Gurney, *Ibis*, 1860, p. 220 [Natal]; Kirk, *Ibis*, 1864, p. 332; Layard, *B. S. Afr.* p. 306 (1867); Barratt, *Ibis*, 1876, p. 193; Holub & Pelzeln, *Orn. Süd-Afr.* p. 271 (1882).

Description. Adult male.—Crown of the head, including the ear-coverts, back of the neck, and, in the middle of its length, the sides of the neck, black; nape feathers elongated and forming a crest; general colour of the body above blackish-slate; paler on the decomposed and elongated scapulars, and on the wing-coverts, which are pearly-grey with white inner margins; tail-feathers, wing-quills and primary coverts black, the latter with some white on the basal halves of the inner webs; sides of the face below the eye and ear-coverts, chin and throat white; middle third of the neck black,

mottled with white in front; edge of the wing white; lower third of the neck slaty-grey with decomposed and elongated plumes; the rest of the lower surface slaty grey, becoming a good deal paler on the under tail-coverts; under wing-coverts and axillaries white.

Iris yellow; bare skin round the eye at the base of the bill whitish-buff; bill slaty-brown, paler on the lower mandible; legs and feet black. Length (in flesh) 38; wing 15·5; tail 6·0; culmen 4·8; tarsus 5·25; middle toe 3·40.

The female resembles the male, but the ornamental plumes are less developed. The young bird is less strongly coloured; the crown and hind neck are slaty-grey; the throat and front of the neck, and the whole of the under parts are white, slightly tinged here and there with pale rufous.

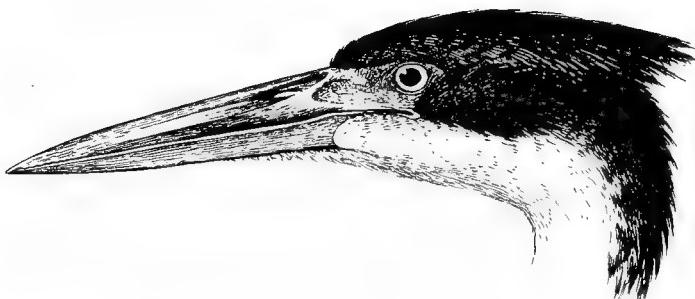


FIG. 18. Head of *Ardea melanocephala*. $\times \frac{2}{5}$

Distribution.—The Black-headed Heron is found throughout the greater part of Africa from Bornu, near Lake Chad, whence it was first brought home by Denham and Clapperton, and from Abyssinia southwards; it also occurs in Madagascar, and is a straggler into North Africa and Southern Europe.

In South Africa it is found wherever conditions are favourable, and is probably just as abundant as the Grey Heron, but, owing to its resemblance to it, it often escapes notice. The following are recorded localities: Cape Colony—Cape division (Layard and S. A. Mus.), Berg River, breeding (Layard), Deelfontein (Seimund), Middelburg division (S. A. Mus.), Colesberg (Layard), and Port St. John's March, October (Shortridge); Natal—near Durban (Ayres), Ingagane River near Newcastle, June (Feilden); Orange River

Colony—Vredefort Road (B. Hamilton); Transvaal—Potchefstroor July (Ayres), near Pretoria, June (Oates), Unigoopie River in Zou spansberg, May (W. Ayres); Rhodesia—Pandamatenga (Holub); German South-west Africa—Gt. Namaqualand, Damaraland, an Ondonga, November (Andersson); Portuguese East Africa—Zambé (Kirk and Alexander).

Habits.—This Heron does not differ from other species of the same genus in its habits. It is generally to be found along river or in marshy ground, though said to be occasionally seen in dry pastures; its food consists chiefly of fishes, but it will also devour snakes, lizards, small mammals and insects; as a rule it goes solitary or in pairs, and retires at night to roost in high trees.

On the Berg River it is stated by Layard to nest among the reeds; but more frequently it chooses a high tree for this purpose as stated by Smith and Mr. W. Ayres. Major Sparrow tells me that he found a nest on October 2nd, placed in a tree growing out of cliff close to the Incandu waterfall near Newcastle in Natal. The eggs, which are usually three in number, are like those of other Herons, pale blue, and nearly equally rounded at both ends; the measure about $2\cdot5 \times 1\cdot75$.

588. *Ardea purpurea*. Purple Heron.

Ardea purpurea, Linn. *Syst. Nat.* 12th ed. i, p. 236 (1766); *Gurney, Ibis*, 1860, p. 220 [Natal]; *Kirk, Ibis*, 1864, p. 332; *Layard B. Afr.*, p. 306 (1867); *Gurney, Ibis*, 1868, p. 468 [Transvaal]; *Ayre, Ibis*, 1869, p. 302; *Layard, ibid.*, p. 376; *Gurney, in Andersson's I Damaral.* p. 286 (1872); *Buckley, Ibis*, 1874, p. 390; *Dresser, I Eur.* vi, p. 217, pl. 396 (1875); *Barratt, Ibis*, 1876, p. 210; *Holu & Pelzeln, Orn. Süd-Afr.* p. 271 (1882); *Butler, Feilden and Reichenow, Zool.* 1882, p. 344; *Sharpe, ed. Layard's B. S. Afr.* p. 710 (1884); *Ayres, Ibis*, 1886, p. 294; *Shelley, B. Afr.* i, p. 157 (1896); *Woodward Bros., Natal B.* p. 196 (1899); *Marshall, Ibis*, 1900, p. 266; *Alexander, Ibis*, 1900, p. 440; *Reichenow, Vog. Afr.* i, p. 377 (1901); *Haagner, Ibis*, 1902, pp. 574, 580; *Shortridge, Ibis*, 1904, p. 205.
Phoxys purpurea, *Sharpe, Cat. B. M.* xxvi, p. 60 (1898).
Pyrrherodias purpurea, *Oates, Cat. B. Eggs*, ii, p. 111 (1902).

Description. Adult male.—Crown black, the feathers on the occiput elongated, with two long plumes extending a good way beyond the others; a black band down the back of the neck, and two other black bands on each side, the rest of the neck being rufous; a rufous band through the eye bordered below by a black

band, the chin and throat being white; general colour of the body slaty, many of the feathers of the scapulars elongated and tinged with rufous; primaries and their coverts very dark slate, almost black, edge of the wing pale rufous; feathers of the lower neck and upper breast very pale rufous, strongly striped with black; lower breast dark maroon, becoming almost black on the abdomen and under tail-coverts; thighs pale rufous; sides of the body, axillaries and quills below slaty; under wing coverts rich rufous.

Iris yellow; upper mandible brown, yellowish at the base; lower mandible brownish horn, yellow towards the tip; legs dark brown in front, chrome yellow behind. Length about 35; wing 14·5; tail 5·5; tarsus 4·6; middle toe 4·9; culmen 4·9.

The female resembles the male but is not so brightly coloured; the nuchal plumes also are not so long or so well developed. Young birds have the crown maroon and only the forehead slaty black; there are no distinct lines of black on the neck, only a slight mottling of that colour; there is a good deal of sandy-buff on the back, the lower throat and fore neck are less distinctly marked with black, and the rest of the lower surface is buffy-white streaked with dusky; bill yellow, blackish along the culmen; tarsi and feet greenish-yellow.

Distribution.—The Purple Heron has a wide distribution throughout central and southern Europe, from France to Turkestan and Persia, east of which it is replaced by a closely allied species. To the south the European bird is found throughout the whole of Africa, including Madagascar.

Within our limits the Purple Heron seems fairly plentiful everywhere, where suitable conditions exist, though perhaps it is not so abundant in Natal and the eastern half of the Colony as in the west. It breeds in South Africa, and is, I believe, a resident.

The following are the chief recorded localities: Cape Colony—Cape div. December (W. L. Slater), Berg River, breeding September (Layard), Orange River (Bradshaw), Worcester, November (S. A. Mus.), Port Elizabeth, fairly common (Brown), King William's Town, rare (Trevelyan), Port St. John's, not common (Shortridge); Natal—Durban Bay (Woodward), Upper Buffalo River (Butler); Orange River Colony—Vredfort Road (B. Hamilton); Transvaal—Potchefstroom, June, August (Ayres), near Johannesburg, common (Haagner); Bechuanaland—Lake Ngami (Andersson); Rhodesia—Upper Zambesi (Holub), near Salisbury (Marshall); Portuguese East Africa—Chicowa, September (Alexander) and Tete (Kirk) on the Zambesi.

Habits.—The Purple Heron is a shy and skulking bird; it is found in marshy places and along the banks of streams, and is somewhat crepuscular in its habits; with others of its kind it resorts to a fixed place of abode at night, making daily excursions in search of food; this consists chiefly of small fishes, but it also devours lizards, frogs and aquatic insects, as well as mice and rats.

The Purple Heron has been observed breeding on the Zambesi, by Kirk, in February, near Potchefstroom, by Ayres, and on the Berg River, by Mr. Kotze, in September; the nest is placed as a rule in a secluded reedy swamp, and is often difficult of access. Several nests are generally found together, they are roughly formed, large structures of sticks and rushes, and usually built up on a number of reeds bent down to form a support; they are often two or three feet in diameter, and have a very slight concavity. The eggs, which are two to three in number, are almost perfect ovals; they are pale blue in colour, and measure, on an average $2\cdot2 \times 1\cdot6$.

Genus II. HERODIAS.

	<i>Type.</i>
Herodias , Boie, <i>Isis</i> , 1822, p. 559	<i>H. egretta</i> .

Closely resembling *Ardea* in structure, but with a slenderer bill and neck, and of smaller size; plumage pure white throughout, with, in the breeding season, a dorsal train of elongated and decomposed plumes reaching beyond the tail; these feathers consist of the main shaft, with the rami or barbs set along it some distance apart, and with no traces of the barbules connecting the barbs, so that the latter are quite free from one another.

Some eight or nine species of nearly world-wide distribution are usually included in this genus. Three of these are found in South Africa.

Key of the Species.

- A. Larger, wing about 14; head only slightly crested, no decomposed feathers on the lower neck..... *H. alba*, p. 65.
- B. Smaller, wing about 12.
 - a. Bill yellow; head only slightly crested; ornamental decomposed plumes on the breast in the breeding season... *H. brachyrhyncha*, p. 66.

- b. Bill black; a pair of elongate narrow plumes
on the nape; ornamental decomposed
plumes on the breast in the breeding
season *H. garzetta*, p. 68.

589. **Herodias alba.** *Great White Egret.*

Ardea alba, Linn. *Syst. Nat.* 12th ed., i, p. 239 (1766); *Buckley, Ibis*, 1874, p. 390; *Dresser, B. Eur.* vi, p. 231, pl. 398 (1880); *Holub & Pelzeln, Orn. Siid-Afr.* p. 278 (1882).

Herodias alba, *Gurney in Andersson's B. Damaral.* p. 289 (1872); *Sharpe, ed. Layard's B. S. Afr.* p. 714 (1884); *Ayres, Ibis*, 1885, p. 349; *Synonds, Ibis*, 1887, p. 335; *Shelley, B. Afr.* i, p. 157 (1896); *Sharpe, Cat. B. M.* xxvi, p. 90 (1898); *Woodward Bros. Natal B.* p. 194 (1899); *Marshall, Ibis*, 1900, p. 270; *Alexander, ibid.* p. 439; *Reichenow, Vög. Afr.* i, p. 388 (1901); *Whitehead, Ibis*, 1903, p. 237.

Description. Adult Female in breeding dress.—Plumage pure white throughout; head slightly crested; scapulars produced and forming elongated decomposed plumes extending beyond the tail; feathers on the fore-neck and sides of the breast also fully developed and forming a kind of shield over the latter, but not decomposed.

Iris pale yellow; bill chrome yellow, blackish towards the tip and along the commissure; bare skin in front of the eye greenish; legs and feet black throughout.

Length (in flesh) 38; wing 14·0; tail 6·2; culmen 4·25; tarsus 5·7; middle toe 4·10.

The adult in non-breeding dress loses the ornamental plumes, and the bill is entirely yellow; the young birds are also without plumes, and have a softer and more downy plumage.

In European and Asiatic examples of this bird the bill is quite black in the breeding season, and yellow at other times; but in Africa the bill appears never to become quite black; the dimensions also vary very remarkably among individuals of this species; those given above (of a female from Potchefstroom) are small as compared with the average stated in the British Museum Catalogue, where a very large male specimen from India is noticed which had a tarsus measuring 8·25 inches, whilst the smallest, a female, also from India, had one of only 5·25 inches.

Distribution. — The Great White Egret is found throughout Southern and South-eastern Europe, and Southern Asia as far as Burma and Ceylon, and is a straggler to Northern Europe and Great Britain; it is also found throughout Africa and Madagascar.

Within our limits this fine Egret seems everywhere a scarce bird; it has only once been recorded from Cape Colony, but is more often met with further north, as the following list of localities shows: Cape Colony—Great Fish River (Albany Mus.), Orange River, near Aliwal North, once seen (Whitehead); Natal—near Maritzburg (Fitzsimmons), Lower Umkomas and Lower Umfolosi River, in Zululand (Woodward); Orange River Colony—Kroonstad, March, scarce (Symonds); Transvaal — Potchefstroom, scarce, January, September (Ayres), Lichtenburg district (Holub), Limpopo River (Buckley); Rhodesia - Matopos (S. A. Mus.), Lower Gurbi River (Marshall); German South-west Africa (Andersson); Zambezi River (Alexander).

Habits.—This handsome bird appears to resemble other Egrets in its habits, haunting reedy pools and swamps, and feeding on fishes, frogs and other aquatic animals. It is a rare bird, very shy and wary, and usually solitary.

It is not known to breed in South Africa, but in its more frequented haunts it nests in societies, sometimes making use of a tree for this purpose, while at other times the nest is placed low down amongst dense reeds. The eggs, usually four in number, are pale blue like those of other Herons.

590. *Herodias brachyrhyncha*. *Yellow-billed Egret.*

- Egretta flavirostris*, (*nec Temm.*) *Bp. Conspl. Av.* ii, p. 116 (1855).
Herodias brachyrhynchos, *Brehm, Journ. Ornith.* 1858, p. 471; *Shelley, B. Afr.* i, p. 157 (1896); *Woodward Bros. Natal B.* p. 193 (1899); *Marshall, Ibis*, 1900, p. 266; *Reichenow, Vög. Afr.* i, p. 389 (1901).
Herodias flavirostris, *Gurney, Ibis*, 1859, p. 249, 1860, p. 205.
Ardea egretta, *Layard, B. S. Afr.* p. 308 (1867); *Barratt, Ibis*, 1876, p. 210.
Herodias intermedia (*nec Wagler*), *Gurney, in Andersson's B. Damara*, p. 289 (1872); *Ayres, Ibis*, 1877, p. 349; *Shelley, Ibis*, 1882, p. 363 [*Spaldings*]; *Sharpe, ed. Layard's B. S. Afr.* p. 714 (1884); *Symonds, Ibis*, 1887, p. 335; *Fleck, Journ. Ornith.* 1894, p. 387.
Mesophoyx brachyrhyncha, *Sharpe, Cat. B. M.* xxvi, p. 87 (1898). “Intarga” of the Matabele (Ayres).

Description. Adult Male.—Plumage pure white throughout; head slightly crested but with no ornamental plumes; dependent ornamental plumes consisting of feathers with the webs entirely broken up, developed on the foreneck and on the scapular region, the former 5 to 6 inches, the latter 12 to 13 inches in average specimens, and projecting considerably beyond the end of the tail.

Iris pale yellow; skin round the eyes and both mandibles yellow; tarsus and feet black; bare part of the tibia yellow, contrasting with the tarsus.

Length about 25·0; wing 12·0; tail 4·9; culmen 2·75; tarsus 4·25; middle toe 3·8.

The female resembles the male, but the ornamental plumes are much less developed. In the young bird there are no ornamental plumes at all.

Distribution.—The Yellow-billed Egret is met with throughout the eastern part of Africa from Kordofan and the Upper Nile Valley southwards through East Africa and Nyasaland to Cape Colony. Other very closely allied species are found in Southern Asia and Australia.

This Egret, though nowhere very abundant, seems to be generally distributed throughout South Africa wherever suitable conditions occur. The following are recorded localities: Cape Colony—Zeekoe vlei in Cape division, and Swellendam, March and June (S. A. Mus.), Knysna, breeding (Atmore), Upington on the Orange River, scarce (Bradshaw), Spaldings in Barkly West division, February (Ayres); Natal—Coast and up-country swamps (Woodward); Orange River Colony—Kroonstad, scarce (Symonds); Transvaal—Pretoria and Potchefstroom (Barratt); Bechuanaland—Lake Ngami (Andersson), Nocana, July, rare (Fleck); Rhodesia—Upper Zambesi (Bradshaw), Salisbury district (Marshall), near Zumbo (Stoehr); German Southwest Africa—Otjimbinque (Andersson).

Habits.—The Yellow-billed Egret is gregarious, and frequents the bays along the coast and the mud flats at the mouths of rivers as well as inland waters; it wades in the shallow water and searches among the mud and weeds for small fishes and other animals. "When they see their prey," writes Ayres, "they stop suddenly, and make a dead point at it, exactly like a pointer dog at a partridge, remaining motionless for a few seconds, then, gradually drawing nearer, they dart their long necks into the water, and almost invariably catch the unlucky fish. At high water, or if disturbed, and at night, they always perch on the upper boughs of the mangroves and other trees that fringe the bay, never roosting on the ground."

Mr. Atmore informed Mr. Layard that this species bred on a little islet in the sea near the Knysna Heads, but that when he visited the place (in December) it was too late for eggs. This is the only information available in regard to the nesting of this species.

The decomposed nuptial plumes of this and other species of White Egrets have always been much sought after as ornaments, not only among the semi-barbarous nations of the east but also in Europe, where the fashion of wearing "ospreys" as they are called in the plume-trade, has of late years assumed alarming proportions and has been the cause of great destruction to these beautiful and graceful birds, especially during the breeding season, just before which the ornamental plumes are assumed.

So far as I am aware, the export of feathers and plumes from South Africa is not very great, but from India and from America the trade is considerable, so that many protests have been made against it by naturalists and others.

591. *Herodias garzetta*. Little Egret.

Ardea garzetta, Linn. *Syst. Nat.* 12th ed. i, p. 237 (1766); *Grill, K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 55 (1858); *Layard, B. S. Afr.* p. 308 (1867); *Barratt, Ibis*, 1876, p. 210; *Dresser B. Eur.* vi, p. 239, pl. 399 (1880).

Herodias garzetta, *Gurney, Ibis*, 1860, p. 221, 1868, p. 468; *Gurney, in Andersson's B. Damaral.* p. 290 (1872); *Shelley, Ibis*, 1875, p. 86; *Ayres, Ibis*, 1874, p. 104, 1877, p. 349, 1880, p. 269; *Butler, Feilden & Reid, Zool.* 1882, p. 344; *Sharpe, ed. Layard's B. S. Afr.* p. 716 (1884); *Fleck, Journ. Ornith.* 1894, p. 387; *Shelley, B. Afr.* i, p. 157 (1896); *Woodward Bros., Natal B.* p. 194 (1899); *Marshall, Ibis*, 1900, p. 266; *Alexander, ibid.* p. 440; *Reichenow, Vög. Afr.* i, p. 387 (1901); *Hellmayr, Journ. Ornith.* 1902 p. 235 [Zwartkop].

Garzetta garzetta, *Sharpe, Cat. B. M.* xxvi, p. 118 (1898).

Description. Adult Male in Breeding Plumage.—Plumage white throughout; a pair of elongated narrow plumes depending from the nape reaching a length of nearly 6 inches; a bunch of similar but shorter plumes and decomposed feathers at the base of the foreneck; dorsal plumes elongated and decomposed reaching a little beyond the tail and slightly re-curved at their tips.

Iris pale yellow, skin at the base of the bill whitish fulvescent: bill black, shanks and tarsus black; feet greenish-yellow, joints darker.

Length about 27; wing 12·0; tail 4·0; culmen 3·55; tarsus 4·40; middle toe 3·12.

The female resembles the male, but the ornamental plumes are as a rule not so well developed; both sexes in the non-breeding

dress as also the young birds resemble the breeding male, but are without the ornamental plumes.

Distribution.—The Little Egret is spread over Southern Europe and Asia from Spain to Japan, the Philippines and the Malay Peninsula; it also occurs all over Africa and Madagascar in suitable localities. Within our limits this Egret appears to be fairly common and widely spread in favourable situations throughout all the Colonies and Territories, and to be in most districts a resident. The following are recorded localities: Cape Colony—Cape division, November, December, Stellenbosch, Caledon, August, Tulbagh, October (S. A. Mus.), Berg River, breeding (Layard), Knysna,

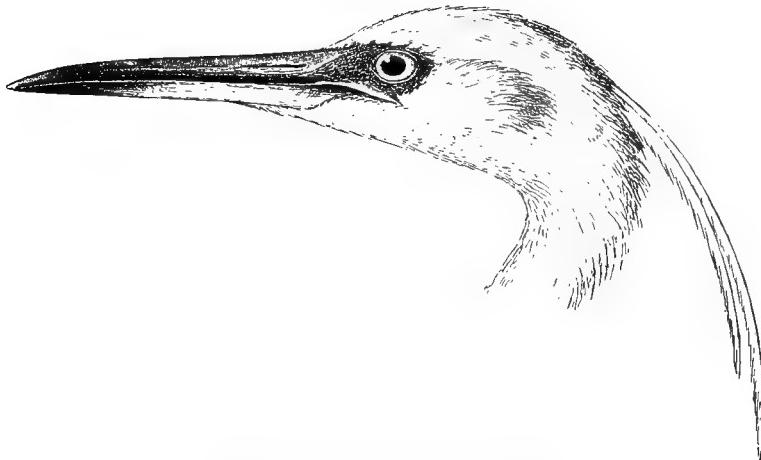


FIG. 19.—Head of *Herodias garzetta*. $\times \frac{1}{2}$

October (Victorin), Port Elizabeth, common (Brown), King Williams Town, scarce (Trevelyan), Orange River, common (Bradshaw); Natal—Durban harbour (Ayres), Newcastle district (Butler); Transvaal—Potchefstroom, January, June (Ayres and Barratt); Bechuanaland—Lake Ngami, common (Andersson); Rhodesia—rare (Marshall); German South-west Africa—scarce (Andersson), Okavango River, July (Fleck); Zambesi River, common (Alexander).

Habits.—This Egret like others of its kind, is usually met with in small flocks about the mouths of rivers near the sea and inland in vleis and marshy places, where it obtains its food, consisting of fishes, frogs, and small crustacea. Layard found the stomachs of two

obtained by him, crammed with the shells of small aquatic mollusca (*Succinea delalandi* and *Physopsis africana*).

Butler and Reid found a small colony of this Egret apparently breeding in the Newcastle district in October, but could discover no nests; Layard was more fortunate, and obtained eggs from the Berg River, where this Egret breeds freely; the clutch consists of three or four eggs; these resemble those of other Herons in being very pale blue and unspotted; they are oval in shape, almost equally rounded at both ends, and measure 2·10 × 1·55.

Genus III. MELANOPHOYX.

Type.

Melanophoyx , Sharpe, Bull. B. O. C. iii, p. 38 (1894).....	M. ardesiaca.
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Bill long and slender, about as long as the middle toe and claw, but distinctly shorter than the tarsus; mandible with a distinct subterminal notch but not serrated; wings long and strong, the second or third primary the longest; the bare portion of the tibiotarsus occupying about half the length of the bone, and about equal to the inner toe and claw; tail of twelve feathers, nearly even and rather short; plumage slaty-black, with narrow elongate, lanceolate, ornamental plumes on the head, foreneck and back, not much decomposed, those of the back not extending beyond the tail.

This genus, containing two closely allied species, both of which are found within our limits, is confined to tropical and South Africa.

Key of the Species.

- A. Throat and under surface entirely slaty black... *M. ardesiaca*, p. 70.
- B. Upper throat vinous rufous, under parts slaty grey or slightly washed with vinous *M. vinaceigula*, p. 72.

592. **Melanophoyx ardesiaca.** *Black Heron.*

Ardea ardesiaca, Wagl., Syst. Av. *Ardea*, p. 189 (1827); Finsch & Hartl. Vög. Ost-Afr. p. 682 (1870); Ayres, *Ibis*, 1871, p. 264, 1878, p. 299, 1880, p. 269; Barratt, *Ibis*, 1876, p. 210; Milne-Edw. & Grandid., Hist. Nat. Madag. Ois. p. 547, pl. 225 (1881); Sharpe, ed. Layard's B. S. Afr. p. 712 (1884); Shelley, B. Afr. i, p. 157 (1896); Woodward Bros., *Natal B.* p. 195 (1899).

Ardea calceolata, *Du Bus*, *Bull. Acad. Brux.* iv, p. 40, pl. 2 (1838);
Layard, *B. S. Afr.* p. 307 (1867).

Ardea flavimana, *Sundev.*, *Oefv. K. Vet. Akad. Fork. Stockh.* 1850, p.
111 [Mooi River, Potchefstroom]; *Layard*, *B. S. Afr.* p. 307 (1867).

Melanophoyx ardesiaca, *Sharpe*, *Cat. B. M.* xxvi, p. 104 (1898);
Reichenow, *Vög. Afr.* i, p. 373 (1901).

Description.—*Adult*.—General colour above and below black with a slight slaty tinge, especially on the long ornamental feathers of the back and scapulars, and on the tips of the primaries; the ornamental feathers are narrow and lanceolate but not decomposed; they are developed on the hinder part of the crown and along the hind neck and also at the base of the foreneck as well as on the scapulars.

Iris bright yellow; bill black; legs black; toes yellow.

Length 17; wing 10·5; tail 3·25; culmen 2·75; tarsus 3·6; middle toe 2·8.

The young bird is like the adult but has no development of ornamental plumes.

Distribution.—The Black Heron is spread over the greater part of tropical Africa and Madagascar from Senegal and the White Nile to Angola and Nyasaland. It is very rare south of the Zambesi and has only been recorded from two localities, the neighbourhood of Potchefstroom, where it was first obtained by Wahlberg, subsequently by Ayres on three occasions, and again by Barratt, and at Durban Harbour, where it has been shot by Gordge, according to the Woodwards.

Habits.—Ayres, who obtained examples of the Black Heron in the swamps near Potchefstroom, has made the following remarkable observation. “This beautiful Heron has a curious habit whilst feeding during the heat of the day and when the sun shines blazing hot, of throwing one wing suddenly forward and holding it out so that it shades a small portion of shallow water; the bird immediately peers into the water searchingly and invariably makes a dart at some unlucky little fish.”

Nothing is known about the nesting habits of this bird, but there are three eggs of it from the Gambia in the collection of the British Museum; they are elongated, with both ends rather pointed, and measure about 1·8 × 1·3.

593. **Melanophoyx vinaceigula.** *Red-throated Heron.*

Ardea ardesiaca (*nec Wagl.*) *Gurney, Ibis*, 1871, p. 264; *Sharpe, ed. Layard's B. S. Afr.* p. 712 (1884).

Melanophoyx vinaceigula, *Sharpe, Cat. B. M.* xxvi, p. 105, pl. 1A (1898); *Reichenow, Vög. Afr.* i, p. 374 (1901).

Description. *Adult.*—Similar to *M. ardesiaca*, but having the throat vinous-red; tarsi and feet greenish-grey.

Length 16·5; wing 9·0; tail 3·65; culmen 2·25; tarsus 3·0.

There are two examples of this species in the British Museum, where they were formerly considered to be the young of *M. ardesiaca*. This does not appear to be the case, however, as there is a young bird of the latter species also in the collection which has a black throat and yellow toes, as in the adult.

Distribution.—Only known from the Potchefstroom district of the Transvaal, whence there are two examples in the British Museum, both obtained by Mr. T. Ayres.

Genus IV. **BUBULCUS.***Type.*

Bubulcus, *Bp. Ann. Sci. Nat.* (4) i, p. 141 (1854) *B. ibis*.

Bill slender and rather short, considerably shorter than the tarsus, which again is about equal to the middle toe and claw: mandibles serrated along their edges; wing long and strong, the first three primaries about equal and longest; tail moderate, rounded and composed of twelve feathers; bare portion of the tibio-tarsus occupying about the lower third of that limb and less in extent than the length of the inner toe and claw; plumage white throughout except the decomposed nuptial plumes on the head, foreneck, and back.

This genus, containing two closely allied species, has a wide range over Central and Southern Europe and Asia, from Spain to the Moluccas, and throughout Africa and Madagascar. Only one species is found in Africa.

594. **Bubulcus ibis.** *Cattle Egret.*

Ardea ibis, *Linn., Syst. Nat.* 10th ed. i, p. 144 (1758).

Ardea lucida, *Rafin., Caratteri*, p. 3 (1810).

Ardea bubulcus, *Audouin, Expl. somm. Pl. Ois. de l'Egypte*, p. 391, pl. 8, fig. 1 (1823); *Delagorgue, Voyage* i, p. 334 (1847); *Gurney, Ibis*, 1863, p. 330, 1868, pp. 256, 468 [Natal and Transvaal]; *Layard*

B. S. Afr. p. 307 (1867); *Barratt, Ibis*, 1876, pp. 193, 211; *Dresser, B. Eur.* vi, p. 245, pl. 400, fig. 1 (1879); *Ayres, Ibis*, 1880, p. 270, 1884, p. 233; *Shelley, Ibis*, 1882, p. 364 [Spaldings]; *Holub & Pelzeln, Orn. Süd-Afr.* p. 275 (1882).

Herodias bubuleus, *Kirk, Ibis*, 1864, p. 333; *Marshall, Ibis*, 1900, p. 265.

Bubuleus ibis, *Gurney, in Andersson's B. Dammaral.* p. 288 (1872); *Oates, Matabeleland*, p. 327 (1881); *Sharpe, ed. Layard's B. S. Afr.* p. 717 (1884); *Fleck, Journ. Ornith.* 1894, p. 387; *Reichenow, Vög. Afr.* i, p. 381 (1901); *Haagner, Ibis*, 1902, p. 574.

Ardeola bubuleus, *Butler, Feilden & Reid, Zool.* 1882, p. 344.

Herodias lucidus, *Shelley, B. Afr.* i, p. 157 (1896); *Hellmayr, Journ. Ornith.* 1902, p. 235 [Nata River].

Bubuleus lucidus, *Sharpe, Cat. B. M.* xxvi, pp. 213, 282 (1898).

Herodias ralloides (*nec Scop.*), *Woodward Bros., Natal B.* p. 193 (1899). "Buff-backed Egret" of many authors, "Tick bird" of some Colonists, "Mafudsangombo" (*i.e.*, Cattle Herd) of Mashonas (Marshall).

Description. Adult Male in Breeding Dress.—Plumage white throughout except for the masses of decomposed elongated ornamental plumes, covering the head and nape, the foreneck and those springing from the centre of the back, all of which are a beautiful vinous pink.

Iris yellow; skin round the eye chrome yellow; bill pinkish-yellow; legs dull yellowish-brown.

Length (in flesh) 21; wing 10·0; tail 3·75; culmen 2·4; tarsus 3·4; middle toe and claw 3·4.

The female is like the male, but has the dorsal plumes less developed; in non-breeding plumage the ornamental plumes are absent, but there is a slight wash of vinous on the crown and foreneck; young birds are very similar to the adults in non-breeding dress.

Distribution.—The Cattle Egret is found along the shores of the Mediterranean from Spain, where it breeds, to the Caspian; beyond this it is replaced by a closely allied species; it is also found throughout the whole of Africa, including Madagascar.

Within our limits this Egret seems to be fairly common except in the western half of Cape Colony, where it has, so far as I am aware, been only once noticed. The following are recorded localities: Cape Colony—Wynberg, May, 1867 (Layard), Colesberg (Arnot), Spaldings in Barkly West, February (Ayres), Grahamstown (Layard), Port Elizabeth, common (Brown), Port St. John's (Shortridge); Natal—Durban Harbour (Woodward), Umlazi River mouth (Ayres), Newcastle (Butler); Orange River Colony—Vrededorf Road

(B. Hamilton) ; Transvaal—Potchefstroom, February, March, July, November (Ayres), near Johannesburg, rare (Haagner), Lydenburg and Pretoria (Barratt), Klerksdorp district (Holub) ; Bechuanaland—Kanye (Exton), Tati, September (Oates) ; Rhodesia—Nata River (Penthaler), Upper Zambesi (Holub), Salisbury (Marshall) ; German South-west Africa—Ondonga (Andersson), Boliva, June, Reheboth January (Fleck).

Habits.—This Egret is essentially a gregarious bird, being found in flocks of from ten to fifty individuals. They are usually seen in company with herds of cattle. They stalk about underneath the oxen, sometimes jumping up to take a tick off their bellies, and

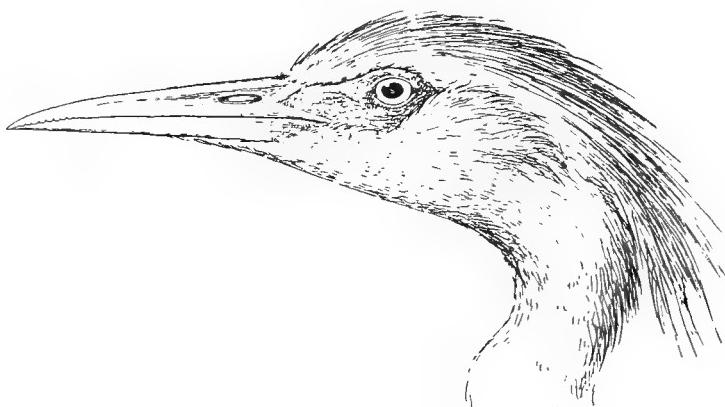


FIG. 20.—Head of *Bubulcus ibis*. $\times \frac{2}{3}$

sometimes perching on their backs for the same purpose ; besides ticks they obtain a good number of grasshoppers, beetles and other insects, disturbed by the beasts. In the wilder parts of the country they associate with buffaloes and elephants in the same way, and their very conspicuous white plumage is often of assistance to the hunter in locating his game. In the evening this Egret resorts in large companies to the branches of small trees overhanging water, where they roost, the same spot being constantly used for this purpose.

Mr. Harold Fry, of Johannesburg, found a nesting place of the Cattle Egret on an island in the Vaal river near Parys, in the Orange River Colony, on November 17. There were about thirty pairs occupying a large tree on the island, together with Goliath,

Grey and Purple Herons and Snake-birds. The nests were slight structures built of sticks, and each contained from three to five eggs. They occupied the middle portion of the tree, the larger Herons being at the top and the Snake-birds among the thicker branches below. A single egg sent to the South African Museum by Mr. Fry is of the usual pale greenish-blue colour and almost a regular oval in shape. It measures 1·8 × 1·3.

Genus V. ARDEOLA.

Type.

Ardeola, *Boie, Isis*, 1822, p. 559.....*A. ralloides*.

Bill long and slender, culmen about equal to the middle toe and claw in length; the upper mandible with a groove on either side, at the base of which is the nostril; the mandibles serrated at their tips; wings rather short and rounded; tail of twelve feathers, short and nearly square; only the lower fourth of the tibio-tarsus bare, this portion less than the inner toe and claw; tarsus short, less than the bill and less than the middle toe and claw; feathers of the head and neck elongate in the breeding plumage, those of the fore-neck and back decomposed as well; plumage chiefly white and buff.

Some four or five species of this genus are usually recognised; they are distributed over the temperate and tropical portions of Europe, Africa and Asia, extending as far as the Moluccas, and including Madagascar. Only one species is found in South Africa.

595. **Ardeola ralloides.** *Squacco Heron.*

Ardea ralloides, *Scop. Ann.* i, p. 88 (1769); *Dresser, B. Eur.* vi, p. 251, pl. 400, fig. 2 (1879).

Ardea comata, *Pall. Reis. Russ. Reichs.* ii, p. 715 (1773); *Layard, B. S. Afr.* p. 308 (1867); *Ayres, Ibis*, 1873, p. 283; *Holub & Pelzeln, Orn. Süd-Afr.* p. 274 (1882).

Buphus comatus, *Gurney, Ibis*, 1860, p. 221, 1862, p. 157; *Kirk, Ibis*, 1864, p. 333.

Ardeola comata, *Gurney, in Andersson's B. Damaral.* p. 288 (1872); *Buckley, Ibis*, 1874, p. 390; *Ayres, Ibis*, 1877, p. 349, 1878, p. 300, 1880, p. 111; *Sharpe, ed. Layard's B. S. Afr.* p. 718 (1884).

Ardea leucoptera (*nec Bodd.*) *Barratt, Ibis*, 1876, p. 210.

Herodias ralloides, *Shelley, B. Afr.* i, p. 156 (1896); *Alexander, Ibis*, 1900, p. 439.

Ardeola ralloides, *Fleck, Journ. Ornith.* 1894, p. 388; *Sharpe, Cat. B. M.* xxvi, pp. 202, 281 (1898); *Reichenow, Vog. Afr.* i, p. 374 (1901)

Description. *Adult Male in breeding season.*—Head and neck all round, including the plumes at the side of the chest, pale buffy-yellow, strongly striped with blackish-brown; a well-developed nuchal crest of narrow pointed feathers, white, bordered on either side by blackish-brown, the tips white; mantle vinous-red, scapulars brownish - buff, both breaking up into ornamental decomposed plumes; rump, upper tail-coverts, tail and wings white, the coverts of the latter washed here and there with buff, and some of the inner secondaries like the scapulars; below, except for the middle and lower part of the neck and upper breast, white throughout.

Iris pale yellow; bare skin round the eye pale yellow; upper mandible dusky greenish-yellow along the commissure near the base; lower mandible greenish-yellow; legs and feet greenish-yellow, a little darker on the toes.

Length (in flesh) 17 to 18; wing 8·75; tail 3·4; culmen 2·5; tarsus 2·25; middle toe 2·5.

The female is generally slightly smaller (wing 7·75), the nuchal crest and dorsal trains are also less developed. The adult in winter plumage has no long nape plumes, the crest feathers are shorter and the back loses its vinous colour and is brown like the scapulars.

Young birds can be distinguished by the black shafts of the outer primaries, while the outer webs and tips are slightly washed with brown; the vinous colour of the centre of the back is replaced by a buffish-brown like that of the scapulars.

Distribution.—The Squacco is a summer visitor in the South of Europe, ranging from Spain to the Caspian Sea; it occasionally reaches the British Islands as a straggler. Throughout Africa (including Madagascar) it is a resident.

In South Africa the Squacco is fairly abundant where suitable conditions exist, but it does not appear to have been met with in the central and western districts of Cape Colony. Though it is apparently a resident, its nesting habits (in South Africa) have not been described.

The following are localities: Cape Colony—near Upington, December (Bradshaw), Colesberg, in winter (Arnot), Grahamstown (Albany Museum), near King Williams Town, rare (Trevelyan); Basutoland—summer (Bowker); Natal—rare (Ayres); Transvaal—Potchefstroom, January, August, October, November (Ayres), Limpopo River (Holub); Bechuanaland—Bamangwato, August (Buckley), Lake Ngami district (Andersson); Rhodesia—Upper Zambesi (Holub); German South-west Africa—common throughout

the year (Andersson), Nocana, July (Fleck); Portuguese East Africa—Tete (Kirk), Zumbo, October (Alexander).

Habits.—Like other Herons the Squacco is found about swamps and sluggish rivers; it is usually seen singly or in pairs, seldom in large parties. It is an inactive bird, spending the greater part of its time in one position, with its head drawn in between its shoulders like a Bittern. Its food consists chiefly of aquatic animals, such as frogs and water-insects, but grasshoppers, beetles and small crabs were found in the stomachs of individuals examined by Ayres.

There can be little doubt that this species nests in South Africa, but no observations on this point have been hitherto recorded. In Europe it builds in colonies in company with other members of the family; the nest is composed of sticks, and placed in low trees or bushes in flooded marshes; the eggs, of the usual greenish-blue colour, are from four to six in number, and measure about $1\cdot5 \times 1\cdot1$.

Genus VI. ERYTHROCNUS.

Type.

- Erythrocenus**, Sharpe, Bull. B. O. C. iii, p. 39
 (1894) *E. rufiventris*.

Bill moderate, the culmen hardly longer than the tarsus, and slightly shorter than the middle toe and claw; the tips of both mandibles serrated, wings rather short and rounded, the second and third primaries the longest; only the last half-inch of the tarsus bare of feathers; tail short, of twelve feathers; plumage slaty and rufous, with no elongated ornamental plumes or dorsal train, but with a rather full neck frill and elongated scapulars overhanging the wings.

The single species here described, confined to South Africa, is the only one referred to this genus.

596. **Erythrocenus rufiventris.** Rufous-Bellied Heron.

Ardea rufiventris, Sundev. Oefv. K. Vet. Akad. Forh. Stockh. 1850, p. 110; Layard, Ibis, 1871, p. 105; Ayres, Ibis, 1871, p. 265, pl. ix, 1880, p. 269, 1886, p. 294; Gurney, in Andersson's B. Damaral. p. 287 (1872); Holub & Pelzeln, Orn. Süd-Afr. p. 273 (1882); Sharpe, ed. Layard's B. S. Afr. p. 713 (1884); Hellmayr, Journ. Ornith. 1902, p. 235 [Pienaar River].

Butorides rufiventris, Oates, *Matabeleland*, p. 327 (1881).

Erythrocnus rufiventris, Sharpe, *Cat. B. M.* xxvi, p. 200 (1898); W. L. Sclater, *Ibis*, 1899, p. 114 [Inhambane]; Reichenow, *Vög. Afr.* i, p. 370 (1901).

Description. *Adult Female.*—General colour above black, darkest on the head and neck, becoming more slaty on the scapulars and back; lower back, rump, tail, and wing-coverts rich maroon-red; primaries and their coverts slaty like the back, most of the secondaries maroon like the coverts, bend of the wing slightly mottled with grey; throat, neck and upper breast black, shaded with bluish slate, especially on the breast; a rather indefinite narrow mesial line of rufous runs down the centre; abdomen, under tail-coverts, axillaries and under wing-coverts rich maroon. Iris rich yellow, shading on the outer ring into orange, skin round the eyes and the basal half of the bill bright yellow, tip of the bill dark brown, legs and feet yellow, toes horn.

Length about 15; wing 8·25; tail 2·5; culmen 2·25; tarsus 2·10; middle toe 2·5. A young bird is duller and browner than the adult, and the rufous colour much paler, throat yellowish buff, as well as the centre of the fore neck.

The only example in the South African Museum, an apparently adult female, has the mesial throat streak very clearly marked; this is not mentioned in Dr. Sharpe's description of a male in the Catalogue of Birds in the British Museum; it therefore seems to be probable that the throat streak is absent in the adult male, and that the sexes differ in this respect.

Distribution.—The Rufous-bellied Heron is confined to Africa south of the Cunene and Zambesi Rivers, extending beyond our limits only in Southern Angola and to Quillimane.

The species was first obtained by Wahlberg, in both "Lower and Upper Caffraria"; and it is in the southern and eastern portion of our area along the rivers that it has chiefly been met with; only the one occurrence within the boundaries of Cape Colony here noted is authenticated.

The following are localities: Cape Colony—King Williams Town (Bt. Mus.); Natal—Durban (Bt. Mus.), St. Lucia Bay in Zululand (Layard); Transvaal—Potchefstroom, December, and junction of Matlabas and Limpopo Rivers (Ayres), Pienaars River bridge in Pretoria district (Penthal); Bechuanaland—Lake Ngami (Andersson); Rhodesia—Hendriks Vlei, December (Oates), Pandamatenga (Holub); German South-west Africa—Okavango River;

Portuguese East Africa—Lake Bavane, near Inhambane, March (Francis).

Habits.—The Rufous-bellied Heron is shy and scarce; several birds are generally seen together, they fly rapidly and settle on reeds; their food consists of aquatic animals such as fish, frogs, worms and water insects. Nothing is known of their nesting habits.

Genus VII. BUTORIDES.

Type.

Butorides, Blyth, Cat. B. Mus. As. p. 281 (1849) *B. javanica*.

Bill straight and strong; culmen distinctly longer than the tarsus, which is about equal to the middle toe and claw; upper and lower mandibles slightly serrated towards the tip; wings rather short, the second and third primaries about equal and the longest;

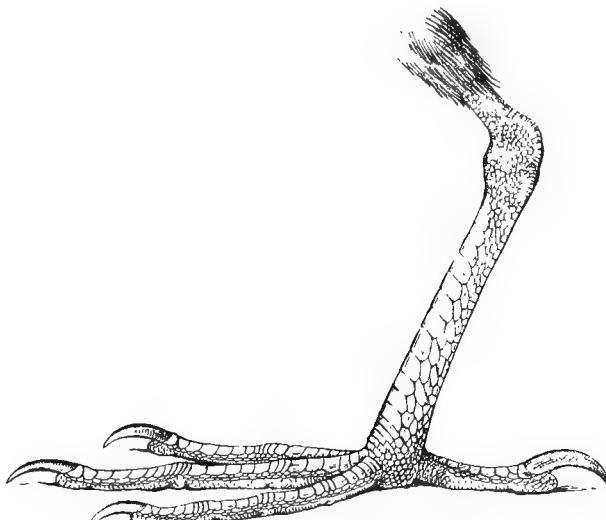


FIG. 21.—Left foot of *Butorides atricapilla*. $\times \frac{1}{2}$

tibio-tarsus feathered almost to the lower joint, leaving no portion bare; plumage greenish or brownish with ornamental elongate, lanceolate feathers on the nape and back, but not on the fore neck; these feathers are not decomposed, and appear to be retained throughout the year.

Some eight species of this genus are usually recognised, distributed over the whole of the New World, Africa, including Madagascar, Southern and Eastern Asia from India to Japan, Australia, and many of the island groups of the Pacific. Only one species is found in Africa.

597. **Butorides atricapilla.** *Green-backed Heron.*

Ardea atricapilla, *Afzel. Act. Acad. Stockhl.* xxv, p. 264 (1804); *Layard. B. S. Afr.* p. 309 (1867).
Butorides atricapilla, *Kirk, Ibis*, 1864, p. 333; *Gurney, Ibis*, 1865, 271 [Durban]; *id. ed. Andersson's B. Damara*, p. 292 (1872); *Ayr. Ibis*, 1878, p. 300, 1886 p. 294; *Shelley, Ibis*, 1882, p. 364 [Umfolozi River]; *Sharpe, ed. Layard's B. S. Afr.* p. 719 (1884); *W. Ayr. Ibis*, 1887, p. 63; *Fleck, Journ. Ornith.* 1894, p. 388; *Shelley, Afr. i*, p. 158 (1896); *Sharpe, Ibis*, 1897, p. 517 [Zululand]; *id. C. B. M.* xxvi, p. 172 (1898); *Woodward Bros., Natal B.* p. 197 (1898); *Alexander, Ibis*, 1900, p. 440; *Reichenow, Vög. Afr. i*, p. 370 (1901); *Hellmayr, Journ. Ornith.* 1902, p. 236 [Pienaar River]; *Shortridge, Ibis*, 1904, p. 205.



FIG. 22.—Head of *Butorides atricapilla*. $\times \frac{3}{2}$. Below, the anterior end of the upper mandible magnified to show the serrations.

Description. Adult Male.—Crown, with the elongated crest feathers produced to a point, back with ornamental plumes at tail, all rich glossy dark green; wings like the back, the cover all edged with sandy buff, the primaries rather more dusky, edges with white; ear coverts more or less ashy, bordered below by short blackish streak; hind neck and sides of the neck ashy-green.

extending forwards over the lower part of the face and backwards over the greater part of the lower surface, except a line down the centre of the breast, which is strongly tinged with rufous; chin, centre of the throat and fore neck white, mottled with tawny rufous, mottling continuous with the entirely rufous central streak on the breast.

Iris yellow, bare skin round the eye light yellow; upper mandible dusky, lower one the same but with a little yellow along the lower margin; legs and feet dusky above, yellow below.

Length about 16; wing 7·25; tail 2·60; culmen 2·30; tarsus 2·0; middle toe and claw 2·0. The female resembles the male.

A young bird is dark brown above, most of the feathers, especially of the wings, tipped with white; the crown is already greenish in an example in the South African Museum; below the throat is white, spotted and streaked with buffish and brown, the rest of the lower surface is streaked with black, white, and buffish white.

Distribution.—The Green-backed Heron is found throughout the greater part of Africa, including Madagascar, Mauritius and Rodriguez, from the Gambia and the White Nile southwards. Within our limits it occurs only in the extreme eastern portion of the Colony, but is generally distributed in the low country of Natal, the Transvaal and Rhodesia up to the Zambesi.

The following are recorded localities: Cape Colony—near King Williams Town, rare (Trevelyan), Port St. John's, May (Shortridge, in S. A. Mus.); Natal—Durban Harbour (Ayres), Tugela River (Bt. Mus.), Victoria county, and Ivuna River in Zululand (Woodward); Transvaal—Marico river, August, and Hex river, December, in Rustenburg (Ayres); Pienaars River bridge in Pretoria distr., April and May (Penther), Rooirand in Zoutspansberg distr., June (W. Ayres), Silati railway in Lydenburg, August (Francis); Bechuana-land—Ngami distr. (Andersson), Nocana, on the Okavango River, July (Fleck); Rhodesia—Umfuli, September, and Quae-quae Rivers, October (Ayres), Makalaka country (Bt. Mus.), Upper Zambesi near Victoria Falls (W. L. Slater); Portuguese East Africa—Zumbo, on the Zambesi, November (Alexander).

Habits.—This Heron is a solitary and retiring bird, generally to be met with along the banks of rivers where there is plenty of bush or among the Mangrove swamps, such as are to be found in Durban Harbour; here it is sometimes to be seen perched on a branch overhanging the water, from which, if disturbed, it soon alights again

in a more retired and shady spot; its cry is harsh and its food consists of aquatic animals of all sorts.

No one has hitherto, so far as I am aware, taken the eggs of this Heron in South Africa, but on the Gold Coast Dr. Reichenow found it nesting in the Mangrove swamps, in small companies, in August and September. The eggs, generally three in number, were of the usual pale greenish-blue Heron type, and measured about $1\cdot 5 \times 1\cdot 05$.

Genus VIII. NYCTICORAX.

Type.

Nycticorax, Rafin., Analyse, p. 71 (1815)..... *N. griseus*.

Bill stout, short and somewhat compressed, the culmen slightly curved and about equal to the tarsus, both distinctly shorter than the middle toe and claw; mandibles not serrated along their edges, but the upper one with a distinct subterminal notch. Wings moderate, third primary generally the longest; tail short, slightly rounded, of twelve feathers; only the lowest half-inch of the tibio-tarsus bare of feathers; tarsus covered with reticulate scales in front; head crested and ornamented with two, much elongated, narrow ornamental plumes in the breeding season.

Some nine species of this almost cosmopolitan genus are generally recognised; two of these are found in Africa and occur within our area.

Key of the Species.

- A. Back greenish-black, no chestnut on the neck ... *N. griseus*, p. 82.
- B. A white patch on the back, neck bright chestnut *N. leuconotus*, p. 85.

598. **Nycticorax griseus.** *Night Heron.*

Ardea nycticorax, Linn., Syst. Nat. 12th ed. i, p. 235 (1766).

Ardea grisea, Linn., Syst. Nat. 12th ed. i, p. 239 (1766).

Nycticorax europaeus, Stephens, Genl. Zool. xi, p. 609 (1819); Kirk, *Ibis*, 1864, p. 333.

Nycticorax griseus, Gurney, *Ibis*, 1865, p. 272, 1868, p. 256; Layard, *B. S. Afr.* p. 311 (1867); Barratt, *Ibis*, 1876, p. 193; Butler, Feilden, and Reid, *Zool.* 1882, p. 344; Holub & Pelzeln, *Orn. Süd-Afr.* p. 277 (1882); Shelley, *Ibis*, 1882, p. 364 [Shangani River]; Sharpe, ed. Layard's *B. S. Afr.* p. 724 (1884); Ayres, *Ibis*, 1884, p. 233; Wood-

ward Bros., *Natal B.* p. 197 (1899); *Marshall, Ibis*, 1900, p. 266; *Alexander, ibid.* p. 440; *Harris, Essays and Photos.* p. 147 (1901); *Whitehead, Ibis*, 1903, p. 237.
Nycticorax ægyptius, *Gurney, in Andersson's B. Damaral.* p. 293 (1872);
Ayres, Ibis, 1874, p. 104.
Nycticorax nycticorax, *Shelley, B. Afr.* i, p. 158 (1896); *Sharpe, Cat. B. M.* xxvi. p. 146 (1898); *Reichenow, Vög. Afr.* i, p. 362. (1901).

Description. Adult male and female in breeding season.—Above, including the crown, nape of the neck, centre of the back and inner secondaries greenish-black; sides of the neck extending round the hind neck as a collar at the base, wings, except the inner secondaries, lower back, tail-coverts and tail-feathers ashy-grey or dove-coloured: forehead, a narrow stripe over the eye, chin, throat



FIG. 23.—Head of *Nycticorax griseus.* $\times \frac{2}{3}$

and underparts white, becoming slightly shaded with ashy-grey on the sides of the body; under wing-coverts nearly white; nape feathers lengthened to form a short crest, in addition to which there are two elongated narrowed white ornamental plumes attaining a length of about nine inches.

Iris crimson; skin all round the eye pale green; upper mandible slaty-black, whitish along the edge; lower mandible flesh-coloured in the central portions, greenish at the base; legs and feet pale yellow.

Length about 22; wing 11·75; tail 4·10; culmen 2·70; tarsus 2·55; middle toe 3·05. In non-breeding plumage the white nape

plumes are lost and the back is said to be of a brighter green, though this latter statement is hardly true of the South African specimens.

The young bird is very different from the adult; it is pale brown, the head, neck and back streaked, the tail, wing-quills and their coverts tipped with buffy to pure white; below, the white predominates and the streaks are pale brown.

Iris orange-yellow or orange-red; legs and feet greenish-yellow.

Distribution.—The Night Heron is found throughout Central and Southern Europe, and as a straggler in North Europe, also in Africa including Madagascar, Central and Southern Asia to Japan and the Moluccas, and in North America, south to the Lesser Antilles and Ecuador.

In South Africa, though generally stated to be scarce, it is widely spread from Cape Town to the Zambesi in suitable spots; probably its apparent rareness is due to its skulking habits.

The following are recorded localities: Cape Colony—Cape division, January, February, March (S. A. Mus.), Worcester, August (S. A. Mus.), Knysna lakes (Harris), Elands Post in Stockenstrom division (Atmore), Port Elizabeth, rare (Brown), East London, rare (Wood), Berg River, breeding (Layard), Orange River, near Aliwal North (Whitehead); Natal—Durban Harbour (Ayres), Ifafa (Woodward), Newcastle district, rare (Butler); Orange River Colony—Frankfort (B. Hamilton); Transvaal—Potchefstroom, June, July, August (Ayres); Bechuanaland—Ngami district, common (Andersson); Rhodesia—Sesheke (Holub), Shangani River, November (Ayres), Salisbury district (Marshall); German South-west Africa—Ondonga in wet season (Andersson); Portuguese East Africa—Lower Zambesi River, near Chinde (Alexander).

Habits.—The Night Heron, as its name implies, is a somewhat nocturnal bird; it inhabits reedy marshes on the banks of rivers, and spends the day motionless and retired in a tree or among the reeds, where it rests in a characteristic attitude with hunched-up back, and neck withdrawn between the shoulders; at dusk it issues forth with somewhat slow and laborious flight in search of its food, which consists of fishes, reptiles, frogs and other water animals. It has a loud, harsh, characteristic cry, sounding "rarr," but seldom heard except at night.

Like so many other members of the family the Night Heron breeds in colonies, but hitherto the only breeding-place known in South Africa is on the Berg River, near Mr. Melck's farm, whence Layard first obtained eggs. Dr. Stark visited this spot on Sep-

tember 9th, 1896, and gives the following account of it: "In a small group of dead willows in a wide part of the river above the farm were numerous nests of this bird, as also of the Snake Bird (*Plotus rufus*), the little River Duiker (*Phalacrocorax africanus*), and the Grey Heron (*Ardea cinerea*). The nests were deep platforms of dead sticks averaging one foot nine inches across and from six to nine inches deep, placed in the fork of a bough, about five or six feet above the water. The birds sat until I was fifteen or twenty yards off, and returned to their nests almost as soon as I departed. The nests had no lining beyond the sticks of which they were built. The red irides of the bird were very conspicuous. Three clutches were taken, two of three, and one of two eggs each, all were quite fresh." These eggs are now in the South African Museum and vary slightly in shape and colour, but are all of shades of pale greenish-blue like those of other Herons; they measure on an average $1\cdot85 \times 1\cdot40$.

599. **Nycticorax leuconotus.** *White-backed Night Heron.*

Ardea leuconota, *Wagl. Syst. Av. Ardea*, p. 189 (1827).

Ardea cucullata, *Wagl. Isis*, 1829 p. 661.

Calherodius cucullatus, *Layard, Ibis*, 1870, p. 443.

Nycticorax leuconotus, *Cab., in Von der Decken Reis.* iii, p. 50, pl. xviii (1870); *Sharpe, ed. Layard's B. S. Afr.* p. 724 (1884); *Ayres, Ibis*, 1885, p. 349; *Shelley, B. Afr. i*, p. 158 (1896); *Sharpe, Cat. B. M.* xxvi, p. 157 (1898); *Reichenow, Vög. Afr. i*, p. 363 (1902).

Description.—*Adult.*—General colour above black, the long scapular plumes white, the outer ones white along the inner webs, and continuous with a white patch on the upper back, rest of the back dusky slate with a greenish shade, lesser wing-coverts washed with rufous-brown; crown crested, black with elongated nape-plumes; lores white, extending above the eye, as also a small patch below the latter; cheeks, ear-coverts, and sides of face, black; upper throat white, lower throat and neck all round bright orange chestnut; a line of black feathers down the hind neck to the mantle; down the centre of the foreneck and breast a few dusky brown feathers, white on the outer web, giving a streaked appearance; sides of the body, flanks, thighs, under wing-coverts and axillaries vinaceous slightly streaked with white.

Iris fiery yellow; lores and orbits bare and greenish-yellow; bill blackish, yellowish towards the base; feet orange.

Length about 20; wing 10·2; tail 4·1; culmen 2·6; tarsus 2·8.

Distribution.—Africa from Senegal and the White Nile southwards. This is a very scarce bird in South Africa, and, so far as I am aware, has only been twice procured—in April, 1870, on the Kleimont River, in the Bathurst division of Cape Colony, by Messrs. E. Atherstone and H. Barber, and on the Hex River in the Rustenburg district of the Transvaal by Mr. Lucas. The latter specimen is now in the British Museum.*

Mr. Lucas states that he found the nest of this bird “ composed of rushes, on water ” and that it contained five eggs tinged with pale green and measuring about $1\cdot8 \times 1\cdot45$.

Genus IX. ARDETTA.

Type.

Ardetta, Gray, *List Gen. B. App.* p. 13 (1842) *A. minutu*.

Bill long and slender, the culmen usually slightly exceeding the tarsus and the middle toe and claw, which are themselves about equal; mandibles serrated towards their tips; wings short and round, the second and third primaries usually the longest; tail very short, slightly rounded, of ten feathers only; tibio-tarsus feathered almost to the heel; tarsus with transverse scutes in front; a slight crest on the nape, and the feathers of the upper breast somewhat lengthened, concealing the lower breast, but no regular ornamental or decomposed train of feathers.

This is a large genus containing some seventeen species of small Bittern-like birds and is distributed all over the world. Four African species are recognised by Reichenow, three of which occur within our limits.

Key of the Species.

- A. Wing-coverts buff contrasting with the black or brown mottled back and scapulars.
 - a. Neck frill chestnut *A. payesi*, p. 86.
 - b. Neck frill ochraceous or ashy fulvous *A. minutu*, p. 88.
- B. Whole of the upper surface, including the wing-coverts and neck, ashy black *A. sturmi*, p. 89.

600. **Ardetta payesi.** *Red-necked Little Bittern.*

Ardea payesi, Hartl., *Journ. Ornith.* 1858, p. 42.

Ardetta minutu (*nec Linn.*) Gurney, *Ibis*, 1859, p. 249, 1860, p. 205, 1868, p. 469, 1878, p. 300; Layard, *B. S. Afr.* p. 309 (1867); Gurney, in Andersson's *B. Damara*, p. 292 (1872); Barratt, *Ibis*, 1876, p. 211.

* There were three examples in the Durban Museum from the neighbourhood of that place: one of these, received in exchange, is now in the South African Museum.

Ardetta podiceps, (*nec Bp.*) *Gurney*, *Ibis*, 1863, p. 330, 1873, p. 259, 1877, p. 350; *Shelley*, *Ibis*, 1875, pp. 63, 86; *Ayres*, *Ibis*, 1878, p. 300, 1880, p. 270, 1884, p. 233, 1886, p. 294; *Sharpe*, *Ibis*, 1894, p. 425; *Shelley*, *B. Afr.* i, p. 158 (1896); *Sharpe*, *Cat. B. M.* xxvi, p. 225 (1898).

Ardea pusilla (*nec Vieill.*) *Layard*, *B. S. Afr.* p. 310 (1867); *Gurney*, *Ibis*, 1869, p. 300; *Butler*, *Feilden, and Reid, Zool.* 1882, p. 344; *Fleck*, *Journ. Ornith.* 1894, p. 388.

Botaurus pusillus, *Sharpe*, *ed. Layard's B. S. Afr.* p. 720 (1884).

Ardetta payesi, *Reichenow*, *Vög. Afr.* i, p. 367 (1901).

Description. *Adult Male.*—General colour above, including the crown, which is strongly crested, back, scapulars, tail, primary coverts and wing-quills glossy greenish-black; wing-coverts pearly-grey passing to a buffy-grey on the lesser series and becoming chestnut on the bend of the wing; sides of the face including the eyebrow and back of the neck vinous-chestnut, becoming paler, almost white, on the chin and front of the neck; below buffy-white, nearly pure white on the abdomen; some long feathers at the sides of the breast, blackish with buffy margins; under wing-coverts and axillaries white; quills sooty-black below; back of the neck bare but covered over by the lengthened curling side feathers.

Iris orange-red, bill pale-chrome, greenish towards the base, dusky along the culmen and at the tip; legs and feet greenish.

Length (with outstretched neck) about 14; wing 5·1; tail 2·1; culmen 2·0; tarsus 1·75; middle toe 1·9.

The female is rather different from the male; the back, including the scapulars and inner secondaries is dark chestnut-brown, the feathers edged with pale buff; the wings, tail and head are like those of the male; the chestnut of the neck is rather richer; below buffy-white with more or less distinct streaks of darker buff at the base of the neck, these feathers concealing the black buff-edged feathers of the breast.

The young bird resembles the old female but is rather more varied and streaky, especially on the wing-coverts and under surface.

Distribution.—This Little Bittern is found throughout Africa from Senegal and the White Nile southwards. In Madagascar it is replaced by a closely allied form (*A. podiceps*) with which it has been hitherto generally united, but from which it differs in its much lighter coloured foreneck and under parts.

In South Africa this Little Bittern is widely spread throughout

the country and appears to be a resident. The following are recorded localities : Cape Colony—Cape division, January, September, Worcester, January, March, Vryburg, August (S. A. Mus.), Ceres (Shelley), Kuruman (Fitch), Port Elizabeth, fairly common (Brown); Natal—near coast (Ayres), Richmond Road (Butler); Transvaal—Potchefstroom, January to September (Ayres), Komati-poort, October (Francis in S. A. Mus.); Bechuanaland—Lake Ngami district (Andersson), Nocana, July (Fleck); Rhodesia.—Upper Zambezi (Bradshaw and Chapman); German South-west Africa—Okavango (Andersson), Reheboth, October (Fleck).

Habits.—The Red-necked Little Bittern is a skulking bird found in thick reed-beds, where it hops from one stem to another and threads its way with great celerity among the tangled vegetation, seldom making a flight of any length or duration. It lies very close, as a rule, when disturbed, and endeavours to avoid observation by stretching out its long neck and compressing its body and remaining motionless in a vertical position so as to resemble the reeds among which it is resting. The food consists of small lizards, frogs, and insects of various kinds, especially grass-hoppers and caterpillars.

Mr. Austin Roberts has found the nest of this species on several occasions in the swamps near Potchefstroom; it is usually placed about four feet above the water where three or four rushes cross one another in the densest part of the reed bed; it is flat and made of roots, similar to a Turtle Dove's, but a little larger. The clutch is two or three, and the eggs, which are white, measure $1\cdot45 \times 1\cdot1$. One nest was found containing three fledglings which had already learned the habit of concealing themselves by standing erect and pointing their beaks up in the air so as to resemble the reeds around them.

601. **Ardetta minuta.** *European Little Bittern.*

Ardea minuta, Linn. *Syst. Nat.* 12th ed. i. p. 240 (1766).

Ardetta minuta, Dresser *B. Eur.* vi, p. 259, pl. 401 (1880); Sharpe, *Cat. B. M.* xxvi, p. 222 (1898); Reichenow, *Vög. Afr.* i, p. 366 (1901); Shortridge, *Ibis*, 1904, p. 205.

Description.—Resembling *A. payesi* very closely, but distinguished by the colour of the sides of the face and neck, where the rufous-chestnut is replaced by a vinous-brown shade; the wing-coverts are

much more strongly washed with buffy-yellow, and the bend of the wing has no chestnut patch.

Iris orange-red : bill yellowish-green, darker along the culmen ; legs green.

Length (in the flesh) 14·5 ; wing 5·5 ; tail 1·8 ; culmen 1·9 ; tarsus 1·65 ; middle toe 1·9.

Distribution.—The Little Bittern is found in temperate and Southern Europe, extending as far east as Northern India ; it is a straggler to Scandinavia and the British Islands. In the northern winter it is found throughout Northern and in parts of Central Africa, while apparently a few birds stray even further south.

This Little Bittern has been so constantly confused with *A. payesi*, the resident South African form, that it is difficult to be certain how many times it has occurred, but there is an undoubted example of this species in the South African Museum, recently obtained by Mr. Shortridge at Port St. John's, in Pondoland, in January.

602. *Ardetta sturmi. African Dwarf Bittern.*

Ardea sturni, Wagl. *Syst. Av. Ardea*, p. 191 (1827) ; *Holub & Pelzeln, Orn. Süd-Afr.* p. 276 (1882).

Cancrophagus gutturalis, Smith, *Rep. Exp. Centr. Afr.* p. 57 (1836).

Ardea gutturalis, Smith, *Ill. Zool. S. Afr. Aves*, pl. 91 (1843) ; Layard, *B. S. Afr.* p. 310 (1867).

Ardetta gutturalis, Gurney, *Ibis*, 1860, p. 221.

Ardetta sturni, Gurney, *Ibis*, 1868, p. 256 ; Shelley, *Ibis*, 1882, p. 364 ; Shelley, *B. Afr.* i. p. 158 (1896) ; Woodward Bros. *Natal B.* p. 198 (1899) ; Marshall, *Ibis*, 1900, p. 266 ; Alexander, *Ibis*, 1900, p. 441 ; Reichenow, *Vög. Afr.* i. p. 368 (1901).

Ardeirallus sturni, Gurney, in Andersson's *B. Damaral.* p. 291 (1872) ; Sharpe, *Cat. B. M.* xxvi, p. 244 (1898).

Botaurus sturni, Sharpe, ed. Layard's *B. S. Afr.* p. 720 (1884).

Description. Adult female.—General colour above throughout, including the sides of the face and cheeks, dark slaty-black, a little lighter on the wing-coverts ; below tawny-buff, richest on the breast ; all the feathers with slaty centres, giving a striped appearance throughout ; axillaries, under wing-coverts and flanks slaty like the back ; coverts along the bend of the wing tawny-buff ; feathers on the nape and fore-neck elongated and full.

Iris reddish-brown ; bill almost black, shading into bluish-green at the base, which is also the colour of the skin round the eye ; legs and toes yellowish-brown in front, bright yellow behind.

Length about 11; wing 6·4; tail 2·0; culmen 1·65; tarsus 1·8; middle toe 1·8.

The male is like the female in most respects, but not quite so rufous below. It is perhaps slightly larger.

In the young bird the general colour above is more slaty, and all the feathers of the back and wing-coverts are tipped with sandy-buff; below the brown streaks are not quite so broad.

Distribution.—The range of the African Dwarf Bittern extends over the greater part of Africa, from Senegal and the Shilluk country of the Upper White Nile, southwards to Cape Colony. It has also occurred in the Canaries.

Within our limits it is most abundant in Rhodesia and Northern Damaraland, and is a decidedly rare bird in Cape Colony; nor has it been recorded from Potchefstroom by the indefatigable Mr. Ayres. The following are localities: Cape Colony—near Cape Town and near the junction of the Vaal and Orange Rivers (Smith), Paarl (Gird according to Layard), Malinesbury (S. A. Mus.); Natal—common (Woodward); Transvaal—Selati railway in Lydenburg, April (Francis in S. A. Mus.); Bechuanaland—Kooroomoorooi Pan, January (Ayres); Rhodesia—Pandamatenga (Holub), Upper Zambezi River (Chapman and Bradshaw), Salisbury district (Marshall), Kafue River (Alexander); German South-west Africa—Ondonga, Ovaquenyana, Ovagandyaro, Omanbonde, all in Ovampoland (Andersson).

Habits.—This Bittern is usually found in swamps surrounded by a few trees and bushes, among the lowest branches of which it prefers to rest. It is not shy, and its flight is slow and heavy; it has a croaking cry and nothing resembling the boom of the true Bittern; aquatic animals of all sorts form its food, such as snails, insects, frogs and small fishes. Both Andersson and Ayres state that this bird is chiefly active at night, but this is disputed by the Woodwards, who were told by Mr. Fitzsimmons that he had several times watched it diligently hunting by day.

Andersson is the only naturalist who has written of its nesting habits; he states as follows: “It breeds in Ondonga, usually placing its nest in the lower branches of palm bushes, which are partly immersed in water, a few feet above which the nest is situated; it is composed of stalks of coarse grass, or of small twigs laid across each other without much care or strength, and with hardly any depression for the reception of the eggs, which are four in number.”

Genus X. **BOTAUROUS.**

Botaurus, Briss., *Orn.* v, p. 444 (1760) *Type.*
B. stellaris.

Bill rather short and stout, somewhat compressed; culmen distinctly shorter than the tarsus; mandibles serrated towards the tips, wings short and rounded, first primary usually the longest; tail short, of ten feathers only; tibio-tarsus feathered down to within about three quarters of an inch of the joint; tarsus considerably shorter than the middle toe and claw; feet large, claws stout and strong, especially that of the hallux, which is sharp and curved, and nearly as long as the hallux itself; plumage long and lax, mottled yellow and black; no ornamental plumes.

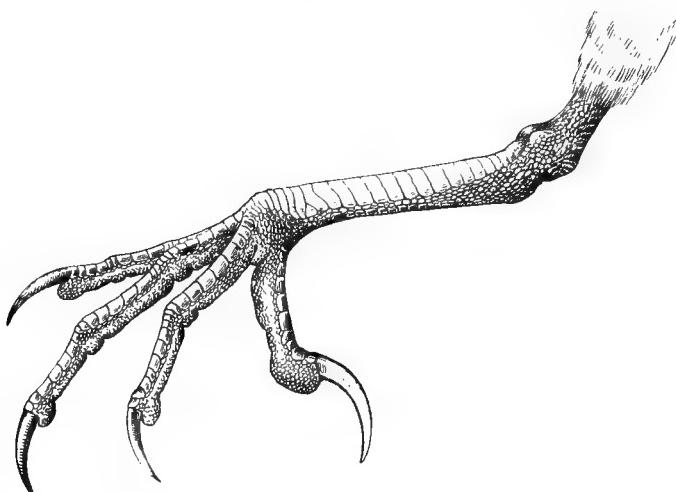


FIG. 24.—Left foot of *Botaurus capensis*. $\times \frac{1}{2}$

Five species of Bitterns, spread all over the temperate and tropical regions of both hemispheres are recognised by Dr. Sharpe. Two species are recorded from Africa, the European Bittern which has been procured in Abyssinia and a closely allied form, confined to South Africa.

603. **Botaurus capensis.** *Cape Bittern.*

Ardca stellaris capensis, Schlegel, *Mus. Pays-Bas*, *Ardca*, p. 48 (1863).
Botaurus stellaris (*nec Linn.*), Layard, *B. S. Afr.* p. 311 (1867);
Barratt, *Ibis*, 1876, p. 211; Ayres, *Ibis*, 1880, p. 270; Butler,

Feilden and Reid, Zool. 1882, p. 344; *Sharpe, ed. Layard's B. S. Afr.* p. 722 (1884); *Symonds, Ibis*, 1887, p. 334; *Fleck, Journ. Ornith.* 1894, p. 388; *Shelley, B. Afr. i.*, p. 158 (1896); *Woodward Bros. Natal B.* p. 198 (1899).

Botaurus capensis, *Ayres, Ibis*, 1869, p. 300; *Sharpe, Cat. B. M.* xxvi, p. 257 (1898).

Botaurus stellaris capensis, *Reichenow, Vög. Afr. i.*, p. 364 (1901); "Roerdomp" of the Dutch.

Description. *Adult male.*—General colour tawny-buff, passing to nearly white, everywhere mottled and freckled with dark brown to black; crown and nape, where the feathers are elongated to form a crest, and a moustachial streak from the gape below the eye and ear-coverts black; wing-quills black, mottled with rufous-brown, but not regularly barred as in the European bird; below the chin is white, the rest of the lower surface pale tawny-buff; the feathers

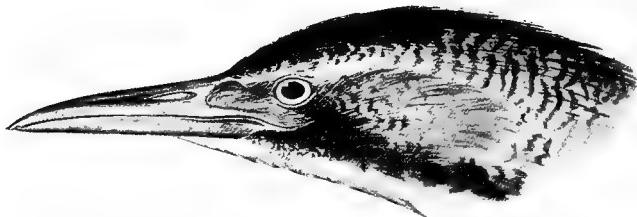


FIG. 25.—Head of *Botaurus capensis*. $\times \frac{1}{2}$

of the neck which are elongated and spread out on either side to form a species of ruff, narrowly banded with transverse markings of dark brown on either side, with ill-defined lines of tawny along the centres; a few of the longer feathers of the breast with broad and almost black centres, those of the abdomen with a few narrow streaks; insides of the thighs and under tail-coverts hardly marked, outsides of the thighs and flanks with the axillaries and wing-coverts more strongly mottled.

Iris yellow to hazel; bare space round the eye ashy fulvous; bill light greenish-ash; legs pale green. Length about 28·0; wing 12·25; tail 4·25; culmen 2·45; tarsus 3·4; middle toe 4·25.

The female is very similar to the male but is slightly smaller. This species differs from the European Bittern only in its slightly smaller size and less barred wing-quills.

Distribution.—The Cape Bittern is confined to South Africa. Nocana on the Okavango River shortly before it enters Lake Ngami is the most northerly point whence it has been procured, but it is not uncommon in Cape Colony and Natal in suitable situations.

The following localities have been recorded: Cape Colony—Cape division, Somerset and Ceres (S. A. Mus.), Verloren Vlei in Piquetberg, Zoetendals Vlei in Bredasdorp (Layard), Port Elizabeth, rather rare (Brown), East London, occasionally (Wood), King Williams Town, twice only (Trevelyan); Natal—Durban harbour and Mooi River (Woodward), Newcastle, fairly common (Butler); Orange River Colony—Bloemfontein (Barratt), Kroonstad, once, December (Symonds); Transvaal—Potchefstroom, May, August, October (Ayres); Bechuanaland—Nocana on the Okavango, July (Fleck).

Habits.—The Cape Bittern resembles its close ally the European bird in its habits; it spends the day concealed among the rushes and reeds, and only emerges towards the evening when it seeks its feeding grounds with slow and laboured flight. Its food consists of fishes, frogs and other aquatic animals. Under ordinary circumstances, the cry of the Bittern is a sharp, harsh "quirk," but during the breeding season, especially at night, the male bird makes a loud booming noise, resembling the deep bellowing of a bull, whence doubtless the bird derives its name. At Potchefstroom Mr. Ayres was informed by the Boers that this curious loud noise proceeded from a gigantic snake that lived in the swamps, but on following up the noise he discovered the real cause very quickly. Mr. Ayres further relates that the Bittern is an exceedingly pugnacious bird when wounded, throwing itself on its back and defending itself with beak and claws, both of which are exceedingly sharp.

There is no very definite information about the nesting habits of the Cape Bittern. Mr. Layard was informed that it bred at Verloren Vlei, and a pair of eggs were brought to him by Mr. Hugo, of Frensch Hoek, which were stated to have been laid by this bird; these were dark olive-green and smooth like those of a duck.

Family IV. IBIDIDÆ.

Bill long and down-curved throughout, the sides somewhat compressed; a longitudinal groove on each side, at the base of which are the nostrils; twelve rectrices.

Anatomical characters are:—Seventeen cervical vertebræ; skull schizorhinal; angle of the mandible produced beyond its articulation with the quadrate; tongue very small; the five garrodian thigh muscles all present; syrinx with the usual intrinsic muscles.

Genus I. IBIS.

Type.

Ibis, Lacép., Mem. l'Inst. Paris, iii, p. 518 (1801)..... I. æthiopica.

Bill long, strong and down-curved throughout, about one and a half times the length of the tarsus; nostrils slit-like openings at the basal end of a nasal groove which extends forward nearly to the tip of the bill; whole of the head and neck all round naked in the adult; wings rather short, the primaries and secondaries about equal; inner secondaries in the adult produced into ornamental plumes with a metallic gloss; tail rather short, of twelve feathers; lower half of the tibia naked; tarsus reticulated with hexagonal scales all round; toes with a basal web for about a quarter of their length.

Four species ranging throughout Africa, Southern Asia and the Australian region are generally recognised. Only one of these is found in South Africa.

604. *Ibis æthiopica*. *Sacred Ibis*.

Tantalus æthiopicus, Lath., Ind. Orn. ii, p. 706 (1790).

Numenius ibis, Cuv., Ann. du Mus. iv, p. 116, pls. 52-54 (1804).

Ibis religiosa, Cuv. Regne Anim. i, p. 483 (1817); Kirk, *Ibis*, 1864, p. 384; Bryden, *Gun and Camera*, p. 408 (1893).

Threskiornis æthiopicus, Gurney, *Ibis*, 1860, p. 219, 1865, p. 275 [Natal].

Geronticus æthiopicus, Layard, B. S. Afr., p. 320 (1867); Barratt, *Ibis*, 1876, p. 211; Holub & Pelzeln, *Orn. Süd-Afr.* p. 292 (1882).

Ibis æthiopica, Gurney, *Ibis*, 1863, p. 259; P. L. Sclater, P. Z. S. 1870, p. 381, fig. 2; Gurney, in Andersson's *B. Damaral*, p. 297 (1872); Ayres, *Ibis*, 1874, p. 105; P. L. Sclater, *Ibis*, 1878, p. 449, pl. xii [young bird and egg]; Butler, *Fleidens and Reed*, Zool. 1882, p. 423; Sharpe, cd. Layard's B. S. Afr. p. 736 (1884); Symonds, *Ibis*, 1887,

p. 335; *Fleck, Journ. Ornith.* 1894, p. 385; *Shelley, B. Afr.* i, p. 155 (1896); *W. L. Sclater, Ibis*, 1896, p. 521; *Sharpe, Cat. B. M.* xxvi, p. 4 (1898); *Woodward Bros. Natal B.* p. 190 (1899); *Marshall, Ibis*, 1900, p. 265; *Reichenow, Vög. Afr.* i, p. 321 (1901); *Haagner, Ibis*, 1902, p. 574.

"Schoorsteen veger" (*i.e.*, Chimney Sweeper) of the Dutch.

Description. *Adult Male.*—Plumage above and below pure white throughout; the tips of the primaries and outer secondaries steel green; the inner secondaries and scapulars elongated and dependent, forming ornamental plumes, the distal halves of these feathers decomposed, very loose in texture and metallic purple in colour; head and neck all round to the base, without feathers and black in colour.

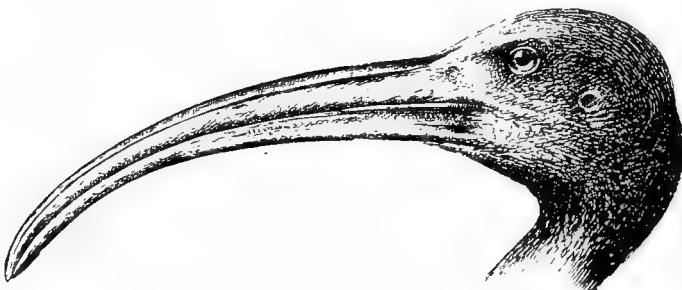


FIG. 26.—Head of *Ibis aethiopica*. $\times \frac{2}{3}$

Iris dark brown; a white or pinkish spot under the eye, bill very dark brown, naked space under the wings bright brick red, legs dark reddish, becoming darker towards the toes.

Length about 35·0; wing 15·5; tail 5·5; culmen 6·5; tarsus 3·85; middle toe and claw 3·55. The female resembles the male but is slightly smaller, wing about 14·6; culmen 5·8.

Young birds have the head and neck covered with short feathers, black, variegated with white on the back and sides of the head and neck, white on the throat and front of the neck, the bastard wing and primary coverts are tipped with black as are also the quills, while the decomposed secondaries are very much shorter; iris dark brown, bill, legs and skin of throat black.

The completely bare black head and neck are not acquired till the second or third year.

A nestling is clothed with short white down all over the body, the head and neck being black; the bill is straight, short, conical and pink in colour.

Distribution.—The Sacred Ibis is found throughout the whole of Africa, especially on the coast and along the larger rivers. It extends as far eastwards as Fao on the Persian Gulf and possibly to the Caspian Sea. In Egypt it only occurs during the time of high Nile in late summer and early autumn, and has hence escaped the observation of most modern travellers.

In South Africa the Sacred Ibis is met with throughout the whole country where suitable conditions exist, but it appears to leave the inland districts early in the Spring and resort to the coast islands to breed.

The following are the chief recorded localities: Cape Colony—Cape division, November (Layard and S. A. Mus.), Robben Island, July (S. A. Mus.), Dassen Island, April (Stark), July (Sclater), Saldanha Bay, May, September, October (Stark), Dyers Island, off the Caledon coast, breeding in December (W. L. Sclater), Zoetendals Vlei in Bredasdorp, December (Layard), Kuruman (S. A. Mus.); Natal—Durban harbour (Ayres), Maritzburg, December, single example (Fitsimmons), Newcastle, September (Feilden), St. Lucia Lake (Woodward); Orange River Colony—Bloemfontein (S. A. Mus.), Kroonstad, June (Symonds), Vredefort Road (B. Hamilton); Transvaal—Potchefstroom (Ayres), Modderfontein, August (Haagner); Bechuanaland—Lake Ngami, August (Fleck), Botletli River (Bryden); Rhodesia—Makabusi River near Salisbury (Marshall); German South-west Africa—Ondonga, but not in Damaraland (Andersson), Okavango River, July (Fleck).

Habits.—This was one of the most sacred birds of the ancient Egyptians; it was regarded as representing Thoth or Tehuti, the Moon Deity, and was preserved in large numbers mummified in the old Egyptian tombs. Cuvier was the first naturalist to identify our present bird with the sacred bird of the ancients.

In South Africa this Ibis is generally found along the coast or about the larger rivers where it obtains its food; this consists chiefly of shell fish, worms and small crabs. It may often be seen about the mud banks and sandy beaches probing the mud with its long beak; it is specially abundant on the guano islands, and is said there to devour the young Penguins and Duikers on the nest, when left by their parents exposed to view. Sometimes they associate in considerable flocks, at other times only three or four are seen together; they fly with neck outstretched and with a series of steady wing-beats followed by a short sail and generally form figures when flying together. They are generally said to be very shy, but on some of the islands they are certainly comparatively tame.

In northern Africa the Ibis is stated to build its nest on high trees in considerable companies, but in South Africa it is only known to breed among the rocks on some of the guano islands, such as Jutten Island off the entrance to Saldanha Bay, Dassen Island north of Table Bay, and Dyers Island on the Caledon coast. On the last-mentioned island I found two nests on December 2, one containing three eggs, the usual clutch, and another containing a young bird just hatched ; in a third nest, obviously also that of an Ibis, were three eggs which appeared to be those of one of the Penguins which were sitting all round in the immediate neighbourhood. The nests were fairly massive structures built up of seaweed and coarse stalks of the island vegetation, somewhat flat on the top and with no lining beyond a slight cement of the guano ; they were placed on some low rocks within a few yards of the sea. The eggs are elongated and chalky white with a faint blue tinge, sparsely covered, chiefly towards the larger end, with a few irregular streaks and splotches of brick red ; they are slightly rough and not glossy, and measure on an average $2\cdot75 \times 1\cdot75$, but vary considerably in size and proportions.

Genus II. GERONTICUS.

Type.

Geronticus, Wagler, *Isis*, 1832, p. 1232.....G. calvus.

Bill and nostrils as in *Ibis* ; only the crown and the upper third of the neck bare of feathers, those on the nape extending nearly up to the occiput ; cranium very much swollen and covered with smooth red skin, contrasting with the bluish rough skin of the neck and throat ; wings slightly longer than in *Ibis*, the inner secondaries normal, and not elongated or forming ornamental plumes ; tail, tarsus and toes as in *Ibis*.

Only the single South African species here described is assigned to this genus.

605. **Geronticus calvus.** *Bald Ibis.*

Tantalus calvus, Bodd. *Tabl. Pl. Enl.* p. 52 (1783).

Ibis calva, Steedman, *Wanderings S. Afr.* i, p. 174 (1835) ; Shelley, *B. Afr.* i, p. 155 (1896) ; Woodward Bros. *Natal B.* p. 190 (1899).

Geronticus calvus, Gurney, *Ibis*, 1860, p. 219 [Natal] ; Layard, *B. S. Afr.* p. 321 (1867) ; Gurney in Andersson's *B. Damaral.* p. 297 (1872) ; Drummond, *Large Game S. E. Afr.* p. 412 (1875) ; Butler,

Feilden, and Reid, Zool. 1882, p. 424; *Sharpe, ed. Layard's B. S. Afr.* p. 738 (1884); *id. Cat. B. M.* xxvi, p. 17 (1898); *Reichenow, Vög. Afr.* i, p. 324 (1901).

“Wilde Kalkoen” or “Wild Turkey” of the Colonists; “Umewangele” of the Amaxosa (Stanford).

Description. *Adult Male.*—General colour throughout metallic dark green, with purplish reflections here and there; the median coverts of the wing metallic coppery-red, forming a conspicuous wing patch; feathers of the lower part of the neck elongated and lanceolate, forming a kind of ruff; below metallic green, but not quite so metallic as on the back.

Top of the head bright red, bill and legs red of a slightly darker and duller shade; sides of the face below the eye and neck all round, pale blue; the bare part of the neck extending about a quarter of its total length on the nape, and about half its length in front.

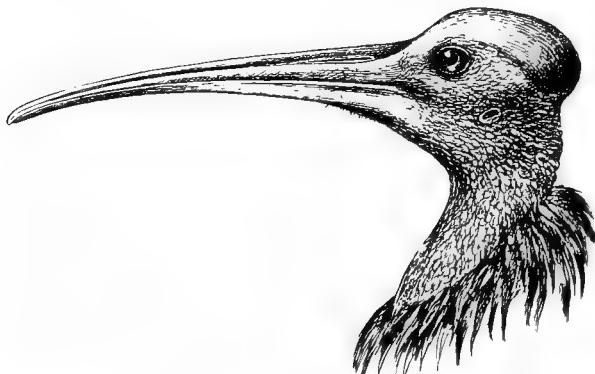


FIG. 27.—Head of *Geronticus calvus.* $\times \frac{2}{3}$

Length about 31·0; wing 16·0; tail 7·5; culmen 5·5; tarsus 2·75; middle toe and claw 2·6.

The female resembles the male, but is slightly smaller, wing about 15·5; culmen 5·0.

The young bird is very much less metallic, the green being mixed with dusky; there is no copper patch on the wings; the top of the head and the neck are thinly covered with greyish feathers, leaving only a small bare blue patch round the eye, and a little red on the fore part of the crown; the bill and legs appear to be red, as in the adult.

Distribution.—The Bald Ibis is a somewhat rare bird, chiefly confined to the mountainous districts of South Africa; it is found throughout Cape Colony, Natal, and perhaps the Orange River Colony, but I am not aware of its having been noticed north of the Vaal River.

The following are recorded localities: Cape Colony—Tygerhoek in Caledon (Layard), Witzenberg in Ceres (S. A. Mus.), Tafelberg in Middelburg division (S. A. Mus.), Orange River (Andersson and S. A. Mus.), Cradock division (Steedman), Port Elizabeth district, rare (J. G. Brown); Natal—Newcastle district (Reid and Sparrow), Rorke's Drift (Reed), Zululand (Bt. Mus.); Orange River Colony—Frankfort (B. Hamilton).

Habits.—The Bald Ibis is a very wild and shy bird, generally seen in small parties, and difficult to approach; it is chiefly to be found among the mountains, and has a partiality for burnt land, where no doubt it finds plenty of food. It walks very fast, and is on the move most of the day, appearing to be always in search of food; this consists chiefly of earth-worms, for which it probes with its long beak, grasshoppers, caterpillars and other insects, while some observers have stated that it by no means despairs carrion, and acts as an efficient scavenger. Notwithstanding this, it is said to be excellent eating.

Although Steedman, in the early part of the last century, stated that this bird nested in companies in the ledges of rocky krantzes, no one, until quite recently, seems to have actually taken the eggs. Major Sparrow, of the 7th Dragoon Guards, tells me that he met with this bird breeding on the spurs of the Drakensberg, near Newcastle, in Natal in 1902; on September 18th he found a nest with two young ones about ten days old, while on November 9th he found two more nests, one containing fresh, the other slightly incubated eggs. The nests were all placed on ledges or in slight holes on the face of a steep, rocky krantz; they were made up of sticks lined with a little grass, and were exceedingly dirty. The eggs, which were two in number in each case, are elongate in shape and very pale blue in colour, faintly spotted with a few reddish brown or purplish spots; they measure 2·70 × 1·75.

Genus III. HAGEDASHIA.

*Type.***Hagedashia**, *Bp. Conspl. ii*, p. 152 (1855)..... *H. hagedash.*

Bill as in *Ibis*, about twice the length of the tarsus, with the slit-like nostrils at the base opening in a groove running nearly to the tip of the bill, on either side of the rigid culmen; crown and face feathered, except for a space between the front of the eye and the base of the bill, the upper part of which is somewhat warty; wings rounded, fourth primary the longest, the secondaries normal, not produced; tail of 12 feathers, nearly square; tarsus covered with hexagonal scales, rather short, shorter than the middle toe and claw.

Only the one species, here described, is assigned to this genus.

606. **Hagedashia hagedash.** *Hadada.*

Tantalus hagedash, *Lath. Ind. Orn.* ii, p. 709 (1790).

Ibis chalcoptera, *Vieill. Gal. Ois.* ii, p. 123, pl. 246 (1834).

Ibis hagedash, *Grill. K. Vet. Akad. Handl.* ii, no. 10, p. 54 (1858).

Geronticus hagedash, *Gurney, Ibis*, 1859, p. 248, 1865, p. 274 [Natal]; *Layard, B. S. Afr.* p. 320 (1867); *Ayres, Ibis*, 1871, p. 266; *Butler, Feilden and Reid, Zool.* 1882, p. 423.

Hagedashia caffrensis, *Bp. Conspl. ii*, p. 152 (1855); *Gurney in Andersson's B. Damaral.* p. 298 (1872).

Hagedashia hagedash, *Sharpe, ed. Layard's B. S. Afr.* p. 739 (1884); *Shelley, B. Afr.* i, p. 156 (1896); *Sharpe, Cat. B. M.* xxvi, p. 19 (1898); *Woodward Bros. Natal B.* p. 191 (1899); *Alexander, Ibis*, 1900, p. 439; *Oates, Cat. B. Eggs*, ii, p. 100, pl. v, fig. 5 (1902); *Shortridge, Ibis*, 1904, p. 204.

Theristicus hagedash, *Reichenow, Vög. Afr.* i, p. 325 (1901).

Other references are *Sparrman, Travels*, 8vo ed. i, p. 299 (1785); *Barrow, Travels*, i, p. 264 (1801); *Delagorgue, Voyage*, i, p. 114 (1847). "Ingagane" (i.e., Black Ibis) of the Amaxosa (Stanford).

Description. *Adult Female.*—General colour above dull olive green; the wing-coverts metallic, showing pinky reflections, while the greater series have a bronzy-gold wash; wing-quills, except the inner secondaries, which are olive-green, bastard wing, primary-coverts and tail-feathers dark purplish-blue; whole of the head, neck and under parts ashy-grey, most of the feathers edged and tipped with paler; a bare space between the eye and the base of the bill black; ear-coverts uniform ashy-brown, bordered below

by a whitish band; under tail-coverts and wing-coverts and axillaries dusky-purplish, slightly metallic.

Iris dark brown (with a narrow outer ring nearly white, according to Ayres); bill black, the culmen crimson towards the base; legs dull red.

Length about 30; wing 14·75; tail 6·5; culmen 5·25; tarsus 2·7; middle toe and claw 2·9.

The sexes are alike; the nestlings are covered with nearly black down.



FIG. 28.—Head of *Hagedashia hagedash*. $\times \frac{1}{2}$

Distribution.—The Hadada is found throughout the whole of the Ethiopian Region from Senegal, Kordofan and Somaliland southwards to Cape Colony. In South Africa this bird is apparently confined to the well-wooded and watered districts of the south and east coasts, and does not occur on the high plateau of the centre of the country, nor did Andersson come across it in German Southwest Africa, although he met with it in the Lake Ngami region.

The following are recorded localities: Cape Colony—Knysna district (Sparrman, Victorin and Layard), Port Elizabeth division (Sparrman and J. G. Brown), East London (Rickard and Wood), Port St Johns (Shortridge); Natal—Ifafa River (Woodward), Pinetown, Balgowan and Upper Mooi River (Stark), Ingagane River and Colenso (Reid); Transvaal—Vaal River, near Potchefstroom, very rare (Ayres); Bechuanaland—Lake Ngami region (Andersson); Portuguese East Africa—Urema River, near Beira (S. A. Mus.), Zambesi River (Alexander).

Habits.—During the winter the Hadada is gregarious, being found in flocks of varying number; these resort in the evening to a special tree, usually one overhanging a river, to roost. It is then fairly easy to approach them and shoot them, as they seldom leave

this particular tree for any length of time. During the day they disperse over the country in smaller parties to their feeding grounds. These are often in dense bush, sometimes in old mealie gardens, or even about the open hills. The food consists almost entirely of insects of various kinds, for which they are constantly in search all day. The note of this Ibis is very loud and harsh, and can be heard at a great distance ; it is approximately syllabled "ha-ha-ha-dahah," and from this sound the bird has obtained not only its vernacular, but also its Latin name, the latter having been applied to it by the Swedish traveller Sparrman, who first met with this bird in the forests of Houtniquas (*i.e.*, Knysna).

The nesting habits of the Hadada have been described by Ayres, Reid and Andersson. The nest is generally placed in a tree overhanging a stream, and is a somewhat slight structure built of sticks and lined with a little dry grass, and rather flat at the top, so that it is surprising that the eggs do not fall out. The usual clutch consists of three eggs ; these are very different from those of the other Ibises, being greenish or greyish-buff, densely covered with brownish splotches and streaks. The example in the British Museum, obtained by Ayres and figured in the Catalogue of Birds' Eggs, is stated to be rather rough and much pitted with pores, and to measure 2·43 × 1·57.

Reid's nest was found near Colenso on November 13th ; the eggs were slightly incubated. Dr. Stark in his notes described a nest found by him on the upper waters of the Mooi River, in the Drakensberg, on November 8th ; it contained two nestlings recently hatched, while a broken egg was found on the ground below the nest. Major Sparrow found the Hadada breeding in the same place as the Bald Ibis, on the cliffs of a spur of the Upper Drakensberg, near Newcastle, on October 20th ; in this case the nest was at the base of a tree growing out of the side of the cliff, and contained two eggs.

Everyone is agreed that the flesh of the Hadada is very good eating.

Genus IV. PLEGADIS.

Type.

Plegadis, Kaup, Natürl. Syst. p. 82 (1829) P. falcinellus.

Bill more slender and less down-curved than in *Ibis*, the groove less marked and the culmen not so ridged ; head and throat feathered except for a space between the eye and the base of the bill, which

is covered by smooth skin; wing pointed, the first two primaries subequal; tail short, less than half the length of the wing, nearly square, of twelve feathers; tarsus longer than the middle toe and claw, covered in front by transverse scutes; claw of the middle toe nearly straight, and pectinated along its inner margin.

Three species of this genus have been described, only one of which occurs in Africa. The range of the genus extends over the greater part of the world.

607. *Plegadis falcinellus. Glossy Ibis.*

Tantalus falcinellus, Linn., Syst. Nat. i, p. 241 (1766).

Numenius igneus, S. G. Gmel., Reis. Sibir. i, p. 166 (1770).

Falcinellus igneus, Kirk, Ibis, 1864, p. 334; Gurney, Ibis, 1865, p. 272 [Natal]; Ayres, Ibis, 1871, p. 266.

Ibis falcinellus, Layard, B. S. Afr. p. 319 (1867); Holub & Pelzeln, Orn. Süd-Afr. p. 291 (1882).

Plegadis falcinellus, Dresser, B. Eur. vi, p. 335, pl. 409 (1878); Ayres, Ibis, 1885, p. 349; Shelley, B. Afr. i, p. 156 (1896); Sharpe, Cat. B. M. xxvi, p. 29 (1898); Woodward Bros. Natal B. p. 192 (1899); Alexander, Ibis, 1900, p. 439.

Falcinellus falcinellus, Sharpe, ed. Layard's B. S. Afr. p. 741 (1884).

Plegadis autumnalis, Reichenow, Vög. Afr. i, p. 329 (1901).

Description. Adult in non-breeding plumage.—General colour above black with purple, green and bronzy metallic sheen; the green chiefly on the wing-quills and primary coverts, the purple on the inner secondaries, the copper on the scapulars and lesser wing-coverts; head and neck all round streaked with blackish and whitish, lower part of the neck and upper mantle, breast and most of the under parts maroon; under wing- and tail-coverts and axillaries black, with green and purple metallic reflections.

Iris brown; bill and legs dark brownish-olive. Length about 18·0; wing 10·0; tail 3·25; culmen 4·5; tarsus 3·15; middle toe and claw 2·75.

In the breeding plumage the head and neck all round are deep maroon chestnut, and the forehead and fore part of the crown glossy green. The female resembles the male but is slightly smaller; a young bird has no maroon at all; the general colour above is metallic, with more green and less purple and copper, the head and neck are dark brown, striped with white, and the breast and under parts ashy-brown without white striping.

Distribution.—The Glossy Ibis has a very wide range. It is spread all over Southern Europe and Asia from Spain to Siam, while north of the Alps it is an irregular visitor, not infrequently reaching the British Islands; it also occurs in the Malayan Islands, Australia, and the eastern United States, as far south as Florida. It occurs throughout the greater part of Africa from Algeria and Egypt to Cape Colony, including Madagascar.

Within our limits it is by no means a common bird, though it has been met with in most of the colonies except German Southwest Africa.

The following is a list of recorded localities: Cape Colony—Sterkstroom division (Albany Mus.), Zeekoe Vlei, Cape division and Orange River (Verreaux apud Layard); Natal—Durban harbour (Woodward), Monocusi River (Ayres); Transvaal—Potchefstroom, March, July, August (Ayres); Rhodesia—near Salisbury (Marshall), Upper Zambesi at Sesheke (Holub), Lower Zambesi, July (Alexander).

Habits.—The Glossy Ibis is usually found in pairs along the banks of rivers and in swamps, where it obtains its food; this consists chiefly of small crustaceans, fishes and frogs. These birds are shy and difficult of approach, and if disturbed circle up in the air to a great height, and go off to some other marsh. The Glossy Ibis is not known to breed in South Africa, but in Spain it makes a nest of a few sticks and reeds in a bush on or near the water; three to four oval, dark greenish blue eggs, measuring $2\cdot0 \times 1\cdot5$ are deposited.

Family V. PLATALEIDÆ.

The Spoonbills are closely allied to the Ibises in all essential anatomical characters, so that they have often been all placed together in one family; the curious spoon-shaped bill, however, at once distinguishes these birds from all others, and constitutes their claim to family distinction.

Genus I. PLATALEA.

Type.

Platalea, Linn., *Syst. Nat.* i, p. 231 (1766) P. leucorodia.

Bill much modified, both mandibles spoon-shaped and much flattened, slightly down-curved at the tip; nostrils near the base of the bill with oval orifices, from which two grooves run forward at

first parallel to one another, and afterwards following the curved margin of the upper mandible; sides of the head and throat bare of feathers; legs long, lower half of the tibia naked, tarsus far longer than the middle toe, covered with reticulate scales; toes webbed at the base.

Spoonbills are found throughout the greater part of the Old World; out of four species generally recognised, two occur in Africa and one is found in South Africa.

608. *Platalea alba*. African Spoonbill.

Platalea alba, *Scop.*, *Del. Flor. et Faun. Insubr.* ii, p. 92 (1786); *Grant*, *Ibis*, 1889, p. 47; *Shelley*, *B. Afr.* i, p. 156 (1896); *Sharpe*, *Cat. B. M.* xxvi, p. 49 (1898); *Woodward Bros.*, *Natal B.* p. 192 (1899); *id. Ibis*, 1900, p. 518; *Alexander*, *Ibis*, 1900, p. 439; *Reichenow*, *Vög. Afr.* i, p. 331 (1901).

Platalea tenuirostris, *Tenm.*, *Man. d'Orn.* 2nd ed. i, p. ciii (1820); *Gurney*, *Ibis*, 1861, p. 184 [Natal]; *Layard*, *B. S. Afr.* p. 313 (1867); *Gurney*, *in Andersson's B. Damaral*, p. 295 (1872); *Ayres*, *Ibis*, 1874, p. 105, 1885, p. 350; *Milne-Edw. & Grandid.*, *Hist. Nat. Madagas. Ois.*, p. 524 pl. 215-217 (1882); *Holub* & *Pelzeln*, *Orn. Süd-Afr.* p. 290 (1882); *Butler*, *Feilden and Reid*, *Zool.* 1882, p. 345; *Sharpe*, *ed. Layard's B. S. Afr.* p. 742 (1884); *Haagner*, *Ibis*, 1902, p. 575.

Platalea nivea, *Burchell*, *Travels*, i, p. 501 (1822).

Description.—*Adult*.—Plumage white throughout; a nuchal crest present; whole of the fore part of the crown, the region round the eye and the throat bare of feathers; the crown bright red, becoming yellowish at the gape and on the chin. Iris white to pearly-grey; bill, upper mandible red, lower mandible slaty-black with yellow spots and edges; legs bright red.

Length about 35·0; wing 15·0; tail 5·0; culmen 7·0; tarsus 4·60; middle toe and claw 3·75.

A young bird has the outer primaries brown, and all the quills including some of the greater coverts with dark brown shafts; the crown of the head is streaked with blackish-brown, the bill dusky yellowish-horn, and feet blackish.

Distribution.—The African Spoonbill is found throughout the greater part of Africa (including Madagascar) south of the Sahara Desert; its place is taken on the Red Sea and Somaliland coasts by the European species which has the head feathered in front of the eye almost to the base of the culmen, and black legs.

In South Africa the present species is by no means common ; it is hardly known in Cape Colony, but appears to be occasionally met with in Natal and the Transvaal, and to be fairly abundant in the Lake Ngami region and on the Zambesi.

The following are the recorded localities : Cape Colony—Kariega in the Alexandria division (Albany Mus.), Berg River, and Verloren Vlei in Piquetberg? (Verreaux), Klaarwater, i.e., Griquatown, in Griqualand West, December (Burchell) ; Natal—Newcastle, breeding October (Butler), Upper Umzimkulu, Durban Harbour, and St. Lucia Bay in Zululand (Woodward) ; Transvaal—Mooi River, near Potchefstroom, October (Ayres), near Johannesburg, once obtained (Haagner) ; Bechuanaland—Lake Ngami, common (Andersson), Salt Pans, and upper Botletli River (Holub) ; German South-west Africa—Damaraland and Great Namaqualand, rare (Andersson) ; Zumbo, on the Zambesi, November (Alexander).

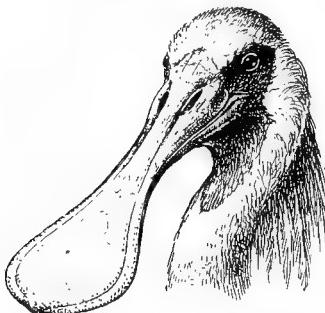


FIG. 29.—Head of *Platalea alba*. $\times \frac{1}{3}$

Habits. This bird appears to resemble the European Spoonbill closely in its habits ; it is generally found in flocks of varying number, often in company with Herons along the muddy banks of rivers or lagoons, where it feeds on small fishes, crustacea, mollusca, and even aquatic insects ; it is a shy bird as a rule, and flies off in companies in V lines. Colonel Butler is the only observer who has found the Spoonbill breeding in South Africa. This was in a reed-bed on the Transvaal side of the Buffalo River, a few miles from Newcastle ; here, on October 1st, he found some five or six large nests built of sedge, placed just above the level of the water ; in most of the nests were two or three young birds just hatched, but one contained three fresh eggs, which were "white, richly marked with

chestnut brown." The water where the nests were found was about three feet deep. Colonel Butler further remarks that the birds were not bad eating.

Order VIII. ODONTOGLOSSÆ.

The Flamingoes, for which birds alone this Order was formed by Nitzch, have been associated with the Ducks on the one hand and with the Herons on the other, and there is no doubt that in their anatomical characters they take a distinctly intermediate position between these two Orders; it will be better therefore, following Huxley, to keep them apart by themselves.

The Flamingoes have very long necks and legs, and the bill, which is abruptly bent down in the middle of its length and is of a very remarkable shape, at once distinguishes them from all other birds.

Anatomical characters are: Skull desmognathous and holorrhinal; nostrils pervious; basipterygoid processes absent or rudimentary; mandible backwardly produced and curved behind its articulation with the quadrate; eighteen or nineteen cervical vertebræ; right carotid artery larger than the left, both united together at the base of the neck; tongue large and thick; cæca well developed; oil gland tufted; flexor perforans digitorum supplying the three anterior toes alone; *ambiens*, accessory femoro-caudal, *semitendinosus* and accessory *semitendinosus* muscles of the thigh present. Eggs white; young hatched covered with down, and able to run almost at once.

Only one family is included in this Order, and most authors include all the species in the single genus *Phœnicopterus*.

Family I. PHœNICOPTERIDÆ.

Genus I. PHœNICOPTERUS.

	<i>Type.</i>
Phœnicopterus , Briss. <i>Orn.</i> vi, p. 532 (1760).....	P. ruber.
Phœniconaias , G. R. Gray, <i>Ibis</i> , 1869, p. 442	P. minor.

Bill with upper mandible abruptly bent downwards in the middle of its length, and smaller and more movable than the lower one, which is stout and practically fixed; the edges of both with a row of

lamellæ; the nostrils are slits about half way along the straight portion of the upper mandible; neck very long with eighteen to nineteen cervical vertebræ; tail of from twelve to sixteen feathers, square; legs very long, the tibio-tarsus feathered for only about a quarter of its length; tarsus covered with large transverse scutes before and behind; anterior toes fully webbed; the claws rather flattened and nail-like; hind toe very small but present (in the African species).

Six species of Flamingoes are generally recognised, distributed over the warmer portions of Europe, Asia, America, and Africa. Two species here described are found in Africa, and, owing to differences in the shape of the mandible, have been sometimes placed in separate genera.

Key of the Species.

- A. Larger, wing about 18 in adult; upper mandible slightly convex and shutting down on the top of the edges of the lower one..... *P. roseus*, p. 108.
- B. Smaller, wing about 14 in adult; upper mandible flattened and shutting down between the rami of the lower one *P. minor*, p. 111.

609. *Phœnicopterus roseus*. *Greater Flamingo*.

Phœnicopterus roseus, *Pall.*, *Zoogr. Rosso-As.* ii, p. 207 (1811); *Dresser*, *B. Eur.* vi, p. 343, pl. 410 (1879); *Fleck*, *Journ. Ornith.* 1894, p. 386; *Salvadori*, *Cat. B. M.* xxvii, p. 12 (1895); *Shelley*, *B. Afr.* i, p. 170 (1896); *Woodward Bros.*, *Natal B.* p. 206 (1899); *Alexander*, *Ibis*, 1900, p. 442; *Reichenow Vög. Afr.* i, p. 349 (1901); *W. L. Sclater*, *Ibis*, 1904, p. 86.

Phœnicopterus antiquorum, *Temm.*, *Man.*, 2nd ed., ii, p. 587 (1820); *Grill*, *K. Vet. Akad. Handl.* ii, no. 10, p. 56 (1858); *Gray*, *Ibis*, 1869, p. 441, pl. xiii, figs. 1, 2.

Phœnicopterus erythræus [in part], *J. & E. Verr.*, *Rev. Mag. Zool.* 1855, p. 221; *Andersson*, *Ibis*, 1865, p. 64; *Layard*, *B. S. Afr.* p. 345 (1867); *Gurney* in *Andersson's B. Damaral.* p. 331 (1872); *Sharpe*, ed. *Layard's B. S. Afr.* p. 744 (1884); *Chapman*, *Ibis*, 1884, pp. 71, 88, pl. 4.

Other references are—*Sparrman*, *Voyage*, 8vo ed. i, p. 30 (1785); *Lichtenstein*, *Travels in S. Africa*, i, p. 44 (1812); *Delagorgue*, *Voyage dans l'Afr. austr.* i, p. 53 (1847); *Baines*, *Explorations in South-west Africa*, p. 9, fig. on frontispiece (1864).

Description.—*Adult Male*.—General colour above and below white tinged with rosy, most strongly marked on the tail; primaries,

outer secondaries and their coverts black; rest of the wing above and below and the axillaries bright crimson.

Iris pale straw; bill (including the skin of the throat and round the eyes) flesh-pink, the terminal third black; legs livid pink, claws black.

Length (in flesh) 55·0; wing 18·5; tail 6·0; culmen 5·5; tarsus 12·5. Height when standing about 4 feet 6 inches to 5 feet. The female is like the male but rather smaller; a young bird is white without any rosy tinge, most of the feathers streaked with dark brown, the coverts mostly brown, axillaries pale pink; the base of the bill dull pinkish; legs dull plumbeous.

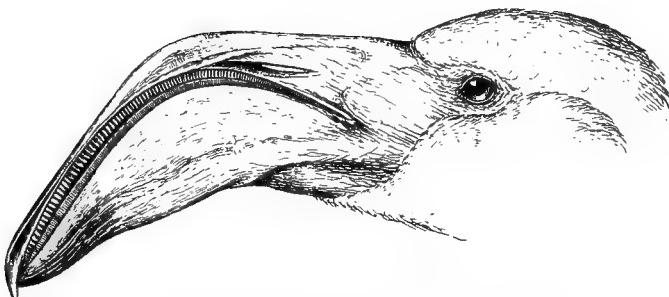


FIG. 30.—Head of *Phœnicopterus roseus*. $\times \frac{1}{2}$

The younger female is brown throughout, slightly paler on the wings; iris hazel; bill horny-brown; skin of the neck and legs leaden-grey; tarsal scales horny.

The nestling is pale brown, the back covered with stiff bristle-like down, black, white and tawny intermixed; the head and neck are pale or tawny-brown becoming rufous on the crown and marked with longitudinal stripes and spots of black; the under-parts are pale tawny and the down is much finer. In older birds the bristles are shed and the back is mottled fulvous and dark brown.

Distribution.—This Flamingo is found throughout Southern Europe and Asia from Spain to Lake Baikal, India and Ceylon and southward throughout Africa to Cape Colony.

In South Africa the Flamingo is very abundant in certain localities, especially along the coast, though it occasionally wanders inland where there are lakes; it was formerly common enough about the neighbourhood of Cape Town and particularly on the vleis near Muizenberg, but owing to the increase of population and the con-

sequent persecution, only an occasional straggler is now met with in that neighbourhood.

The following are recorded localities : Cape Colony—Cape division (Layard and S. A. Mus.), Saldanha Bay, September (W. L. Slater), Berg River, September (Stark), November (S. A. Mus.), Bredasdorp division (S. A. Mus.), Knysna (Victorin), Port Elizabeth, fairly common (Brown) ; Natal ; Durban harbour, formerly common, now rare (Woodward), Newcastle, February (Woodward) ; Transvaal—Lake Chrissie in Ermelo district, plentiful and breeding (G. Hutchinson) ; Bechuanaland—Lake Ngami, breeding (Andersson) ; German South-west Africa—Walvisch Bay, common (Andersson and Fleck), Sandwich harbour, Angra Pequena, Lake Onondara (Andersson) ; Portuguese East Africa—Inhambane and Zambesi delta, July (Alexander).

Habits.—The favourite resorts of Flamingoes are mud flats and sand banks along the shores of lagoons or salt water lakes as well as the actual sea shore itself ; here they are to be found in large flocks ; they feed both by day and by night, wading in a line in the shallow water with their long necks bent down searching with their bills for small mollusca and crustacea ; they also feed on the green con-fervæ and sea-grasses which grow so abundantly in these situations. The structure of their bills is admirably adapted for such a purpose, the flat upper mandible forming a digging organ, while with their thick tongue and the filtering lamellæ along their lower mandibles they squeeze out the mud and slime, retaining only the nourishing matter. During the heat of the day they usually rest in some secluded spot, supporting themselves on one leg with the long neck curled up under the wing. If disturbed by a shot they rise and fly off, and then it is that the beautiful crimson and black of their wings becomes visible. They swim very well, though preferring to wade. They fly with the neck stretched out in front and the legs behind, which makes a very curious effect, and their voice is a loud croak.

Andersson states that they leave the coast in February for Lake Ngami and other places in the interior, where they breed, but he does not give any details. The Woodwards were informed by Mr. G. Hutchinson that the Flamingo breeds at Lake Chrissie, in the Transvaal.

In Southern Spain the nests are in the form of a low inverted cup, built up of mud and vegetable matter, placed either in the shallow water or close by ; the birds sit on the nest with their long legs bent and the joints projecting behind the tail, not straddle-

legged, as at one time was thought to be the case. Sitting birds, observed in this position, were figured by Mr. Chapman in the *Ibis* for 1884.

The eggs, it is said, are usually two in number; they are white, nearly equally rounded at both ends, and the surface is without gloss, rather rough and wrinkled. One, mentioned by Layard as having been obtained from Miss Boonzaier, of Hoetjes Bay, is still preserved in the South African Museum; it measures 3·7 × 2·30.

The Flamingo is generally covered with a thick layer of fat, and is excellent eating.

610. Phœnicopterus minor. Lesser Flamingo.

Phœnicopterus minor, *Geoffr.*, *Bull. Soc. Philom.* i, 2, no. 13, p. 98, figs. 1, 2, 3, on plate (1797); *Strickland and P. L. Sclater, Contrib. Ornith.* p. 159 (1852); *Andersson, Ibis*, 1865, p. 65; *Layard, B. S. Afr.* p. 345 (1867); *Gray, Ibis*, 1869, pp. 440, 2, pl. xv, fig. 8; *Gurney in Andersson's B. Damara*, p. 333 (1872); *Sharpe, ed. Layard's B. S. Afr.* p. 745 (1884); *Fleck, Journ. Ornith.* 1894, p. 387; *Shelley B. Afr.* i, p. 170 (1896); *Reichenow, Vög. Afr.* i, p. 352 (1901).

Phœnicopterus parvus, *Vieill.*, *Analyse*, p. 69 (1816); *Kirk, Ibis*, 1864, p. 335.

? *Phœnicopterus erythræus*, *Holub & Pelzeln, Orn. Süd-Afr.* p. 305 (1882).

Phœniconaias minor, *Salvadori, Cat. B. M.* xxvii, p. 18 (1895); *Woodward Bros., Natal B.* p. 207 (1899).

Description. Adult Male.—Considerably smaller than *P. roseus* but in plumage closely resembling it; the general colour white washed with rosy, the primaries and secondaries black, the wings generally, including the primary coverts and axillaries rosy, the median coverts bright crimson in their centres. Very old birds have the feathers of the back and breast with mesial crimson streaks.

Iris red or orange; bill dark lake-red with black tip; legs and feet red.

Length about 39·0; wing 14·0; tail 5·0; culmen 4·5; tarsus 8·5.

The female resembles the male but is less bright and has no crimson mesial stripes on the back and breast. A young bird is pale brown, all the feathers with dark brown shaft marks, especially on the back and wings; the axillaries alone show a slight rosy tint; the bill and legs plumbeous.

This species is distinguished from the former one by its smaller size and by its upper mandible, which is sunk into and included between the rami of the lower one.

Distribution.—The Lesser Flamingo is found in North-western India, Madagascar and Eastern and Southern Africa from Abyssinia and Shoa southwards to Cape Colony. It appears to be doubtful whether it reaches Senegal.

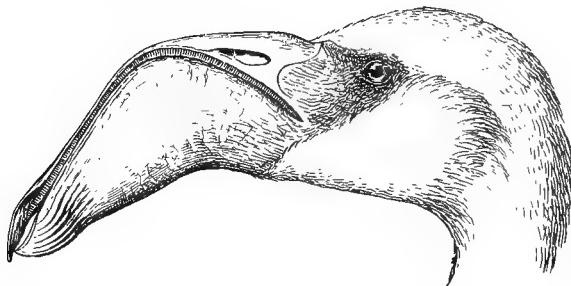


FIG. 31.—Head of *Phoenicopterus minor*. $\times \frac{1}{2}$

In South Africa this Flamingo seems to be most common on the East coast, while it is distinctly rarer on the West, but we have very little information about this species, as it seems to have been generally confused with the larger bird. The following are localities : Cape Colony—Saldanba Bay (S. A. Mus.) ; Vogel Vlei in Paarl division and Cradock (Layard) ; Mafeking district (Holub) ; Natal—Lower Umkomas (Haynes), Durban harbour and Ngutu in Zululand (Durban Mus.) ; Bechuanaland—Lake Ngami, common (Andersson), in August (Fleck) ; German South-west Africa—Walvisch Bay, very rare (Andersson) ; Zambesi Delta (Kirk).

Habits.—The Lesser Flamingo is often found associated with the Common Flamingo, and appears to resemble it in its habits. Its breeding places in Africa and India are unknown, but in the latter country eggs irregularly laid without nests have been found in May at the Sambhur Lake in Sind.

Order IX. ANSERES.

This Order includes the Ducks, Geese and Swans, and forms a well marked and clearly circumscribed group of birds. Externally they can be distinguished by their characteristically shaped bill, which is somewhat flattened and depressed, and covered with a soft

membrane, except at the tip of the upper mandible, where there is a hard nail; furthermore, both mandibles have just inside their cutting edges a series of horny lamellæ of varying development in different genera; the number of tail feathers varies from fourteen to twenty-four; the legs are short and the anterior toes fully webbed; the hind toe is small and jointed above the level of the others; the eggs are numerous, white, pale greenish or creamy, and unspotted; the young are covered with down when hatched, and able to run or swim at once.

Anatomical characters are: skull desmognathous and holorhinal; basipterygoid facets present; after-shaft small or absent; two carotids; syrinx with two pairs of intrinsic muscles, and often with a bony or membranous enlargement; oil gland tufted; cæca long; all the garrodian thigh muscles present except the accessory semitendinosus.

There is only a single family of this Order in South Africa, and this again it is by no means easy to divide into sub-families; the Swans, true Geese and Smews can perhaps be satisfactorily diagnosed, but all the genera represented in South Africa seem to fall within the limits of the typical subfamily *Anatinæ*.

Key of the Genera.

A. Hind toe not lobed or very narrowly lobed; its breadth never one-third the length of the toe.

a. No metallic speculum on the wings.

a¹. Tarsus with a line of transverse scutes in front.

a². Size very large, wing over 20; face bare; a strong carpal spur.....

Plectropterus, p. 114.

b¹. Size moderate, wing about 14; face feathered; a comb-like elevation on the bill of the male.....

Sarcidiornis, p. 118.

c¹. Size very small, wing about 6; bill short and deep; no spur or comb.....

Nettopus, p. 121.

b². Tarsus reticulate throughout; bill with a strong nail directed vertically downwards

Dendrocygna, p. 124.

b. A metallic or brightly coloured speculum on the wings formed by the outer secondaries.

a¹. Bill about equally broad throughout its length.

- a².* Size larger, wing over 12; an osseous callosity on the bend of the wing.
- a³.* Tarsus longer than the middle toe and claw; lamellæ along the upper mandible not conspicuous..... *Alopochen*, p. 127.
- b³.* Tarsus about equal to the middle toe and claw; lamellæ along the mandibles prominent and conspicuous ... *Casarca*, p. 131.
- b².* Size smaller; wing under 12.
 - a³.* Speculum blue or green.
 - a⁴.* Bill as long as the head; tail-feathers sixteen to twenty..... *Anas*, p. 133.
 - b⁴.* Bill shorter than the head; tail-feathers fourteen to sixteen..... *Nettion*, p. 138.
 - b³.* Speculum salmon-pink; bill shorter than the head; tail-feathers fourteen to sixteen..... *Pæcillionetta*, p. 141.
 - b¹.* Bill spatulate, broadened towards the tip; upper wing-coverts blue..... *Spatula*, p. 143.
- B.* Hind toe broadly lobed, the breadth of the lobe at least one-third of the length of the toe; no speculum.
 - a.* Tail-feathers normal, not narrowed or stiffened *Nyroca*, p. 146.
 - b.* Tail-feathers narrowed and stiffened.
 - a¹.* Tail short, about one-third the length of the wing; nail of the bill large, and bent vertically downwards..... *Thalassiornis*, p. 150.
 - b¹.* Tail longer, about half the length of the wing; nail of the bill bent downwards and inwards..... *Erismatura*, p. 152.

Genus I. PLECTROPTERUS.

Type.

Plectropterus, Steph. Gen. Zool. xii, pt. 2 p. 6 (1824), P. gambensis.

Bill long and stout, rather deep at the base, and with a strong nail; face in front of the eye and on the crown of the head bare of feathers in the adult; wings with a strong carpal spur; tail long and rounded, the feathers fourteen in number, broader than in most of the Ducks; tarsus stout and strong, about the same length as the middle toe and claw, with a row of scutes in front; hind toe rather long, and with a narrow web below; plumage glossy; trachea in the male with a bulb at its base on the left side, surrounded by a bony fenestrated framework.

Salvadori recognises, rather doubtfully, four species of this

genus from Abyssinia, Shoa, West, Central and South-east Africa respectively, but the distinctive characters are chiefly those which vary with sex and age, and are therefore of uncertain validity. Two of the so-called species are found within our limits.

Key of the Species.

- A. Throat and under tail-coverts mostly white *P. gambensis*, p. 115.
- B. Throat and under tail-coverts mostly black *P. niger*, p. 118.



FIG. 32.—Bend of the wing of *Plectropterus gambensis* showing the carpal spur. $\times \frac{9}{10}$

611. **Plectropterus gambensis.** *Spur-winged Goose.*

Anas gambensis, Linn. *Syst. Nat.* 12th ed, i. p. 195 (1766).

Anser leucogaster et melanogaster, *Livingstone, Miss. Travels*, p. 253 (1857).

Plectropterus gambensis, *P. L. Sclater, P. Z. S.* 1859, p. 131, pl. 153, 1860, p. 38 (fig. skull and trachea), 1880, p. 498; *Kirk, Ibis*, 1864, p. 335; *Layard, B. S. Afr.* p. 346 (1867); *Gurney, in Andersson's B. Damaral.* p. 334 (1872); *Buckley, Ibis*, 1874, p. 390; *Ayres, Ibis*, 1880, p. 272; *Holub & Pelzeln, Orn. Süd-Afr.* p. 310 (fig. of skeleton) (1882); *Butler, Feilden and Reid, Zool.* 1882, p. 426; *Sharpe, ed. Layard's B. S. Afr.* p. 746 (1884); *P. L. Sclater, Ibis*, 1886, p. 300, fig. 3 (spur); *Nicolls and Eglington, Sportsm. S. A.* p. 121, pl. xii, fig. 63 (1892); *Bryden, Gun and Camera*, p. 405 (1893); *Fleck, Journ. Ornith.* 1894, p. 380; *Salvadori, Cat. B. M.* xxvii, p. 48 (1895); *Shelley, B. Afr.* i, p. 170 (1896); *Woodward Bros. Natal B.* p. 208 (1899); *Marshall, Ibis*, 1900, p. 268; *Alexander, Ibis*, 1900, p. 443; *Reichenow, Vög. Afr.* i, p. 184 (1900); *Whitehead, Ibis*, 1903, p. 237; *Shortridge, Ibis*, 1904, p. 206.

"Wilde Macaauw" or "Maccoa" of the Dutch, "Peele Peele" of the Bechuanas (Nicolls and Eglinton), "Esikwi" of the Kaffirs (Lawrence), "Letsikhin" of the Basutos (Murray).

Description. *Adult Male.*—General colour black with coppery-red and green reflections; sides of the head, throat, lower part of the neck, breast and abdomen, thighs and under tail-coverts, some of the lesser wing-coverts and edge and angle of the wing, white; a stout sharp pointed carpal spur at the bend of the wing.

Iris hazel; bill, including the bare skin at the top of the head and the frontal knob, red; nail of the bill whitish; bare skin round the eye and on the sides of the face grey; feet flesh coloured.

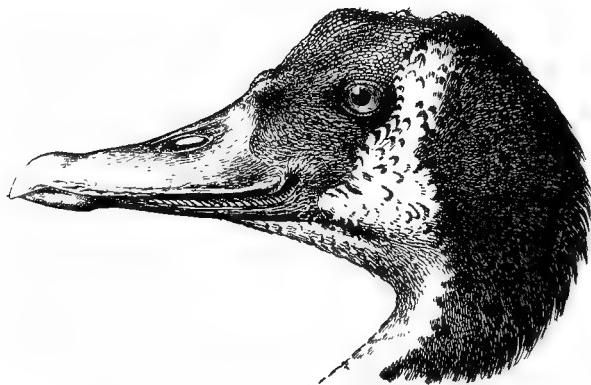


FIG. 33.—Head of *Plectropterus gambensis*, ♂. $\times \frac{2}{3}$

Length about 39; wing 21·5; tail 7·5; tarsus 4·5; culmen 3·5; weight about 12 lbs., has been obtained up to 15 lbs.

The female resembles the male but is rather smaller (wing 18·2 according to Andersson) and has the naked part of the face less extended and a smaller frontal knob. Young birds have the face entirely feathered and no knob.

Distribution.—The Spur-winged Goose is found throughout the whole of the Ethiopian region from the Gambia and Kordofan on the White Nile southwards. A certain amount of variation, however, occurs among these birds, and it appears to be uncertain how far this is due to age and individual, and how far to geographical, causes.

The present species is found within our limits chiefly in

Bechuanaland and along the Zambesi, and is seldom met with south of the Orange River, as the following records show.

Cape Colony—Peelton, near King Williams Town, two examples seen (Trevelyan), Port St. John's, two seen, rare (Shortridge), Orange River, near Aliwal North, once seen, January (Whitehead), Lady Grey division, not uncommon (Lawrence), Mahura's country (*i.e.*, Taungs division) (Arnot), Hart's River (Holub), Vaalpens Pan, near Mafeking (Nicolls and Eglington); Natal—Newcastle district, in winter (Butler), Howick, Maritzburg and Conzella flats (Woodward); Basutoland—near Maseru, on the Caledon, breeding (Bowker); Transvaal—Vaal River, near Heidelberg (Gilfillan); Bechuanaland—Lake Ngami, Botletli and Tougha Rivers (Chapman, Andersson, Bryden and Fleck); Rhodesia—Upper Zambesi (Livingstone, Chapman and Holub), Mashonaland, not uncommon (Marshall), German South-west Africa, Okavango River (Andersson); Portuguese East Africa—Lower Zambesi (Alexander).

Habits.—This, the largest of South African Ducks, can be at once recognised by the sharp pointed spur arising from the carpal bone of the wing which the bird uses in fighting with its fellows; they are usually seen in small flocks which fly far overhead in the usual V formation; they come early from the swamps and feed over the grass- and corn-lands on seeds, as well as on insects and worms, while they spend the middle of the day resting on a tree branch or on some island or rock in the river. Their cry is a loud hiss. They are difficult birds to approach, as they are usually very shy, and even when within range, they are hard to kill owing to their tough skins.

As a rule they make their nests in long grass or in thick reed beds, where they lay from eight to twelve eggs. A clutch of eight eggs was taken by Colonel Bowker from an old Hammerkop's nest on an overhanging rock on the banks of the Caledon River near Maseru in Basutoland: some of these eggs are still in the South African Museum; they are smooth, shining and ivory white and measure about 2·8 × 2·1. Livingstone states that on the Upper Zambesi these birds choose ant-hills for their nests.

Most authorities state that the young birds are delicate and tender to eat, though the old ones are tough and unpalatable.

612. **Plectropterus niger.** *Black Spur-winged Goose.*

Plectropterus niger, *P. L. Sclater, P. Z. S.* 1877, p. 47, pl. 7; *Salvadori, Cat. B. M.* xxvii, p. 50 (1895); *Shelley, B. Afr.* i, p. 170 (1896); *Oates, Cat. B. Eggs*, ii, p. 142 (1902).

Plectropterus gambensis niger, *Reichenow, Vög. Afr.* i, p. 186 (1900).

(Some of the references to the previous species may refer partly or wholly to this one.)

Description. *Adult.*—Closely resembling *P. gambensis* but with less white on the plumage, which is black throughout except for a patch on the abdomen; under tail coverts mostly black; frontal knob not prominent; naked sides of the face restricted.

Iris dark brown; bill bright red; with a whitish or pale flesh coloured nail; tarsus and feet dingy pale.

Length about 38·0; wing 20·0; tail 9·0; tarsus 5·0; bill from gape 3·7.

An example from near Beira in the South African Museum agrees very well with the description of this species, except that it has almost as much white on the wings as the true *P. gambensis*, and I strongly suspect that *P. niger* and *P. gambensis* are really only different forms of the same species, perhaps due to age.

Distribution.—The types of this species, brought to England alive for the Zoological Gardens in London, came from Zanzibar. An example from Potchefstroom is preserved in the British Museum, while the specimen from near Beira obtained by Mr. L. MacLean for the South African Museum has already been alluded to. If distinct, this species will probably be found to range over South-east Africa from Zanzibar to Natal.

Genus II. **SARCIDIORNIS.**

Type.

Sarkidiornis, *Eyton, Mon. Anat.* p. 20 (1838) *S. melanonota*.

Bill rather short and high, with a prominent nail at the tip; a semi-circular flattened elevation (the "knob" or "comb") along the top of the culmen, present in the males only; front of the face and chin fully feathered; wings long, nearly reaching the tip of the tail; third primary usually the longest; a blunt osseous lump on the carpal bone but no horny spur; tail of twelve feathers, comparatively short and rounded; tarsus reticulated; hind toe moderate with a very narrow lobe; plumage glossy above; trachea with an

entirely osseous lateral diverticulum or bulb on the left side in the male only.

This genus contains only two species—the old world form here described with a wide distribution throughout Africa and Southern Asia, and a second one confined to South America.

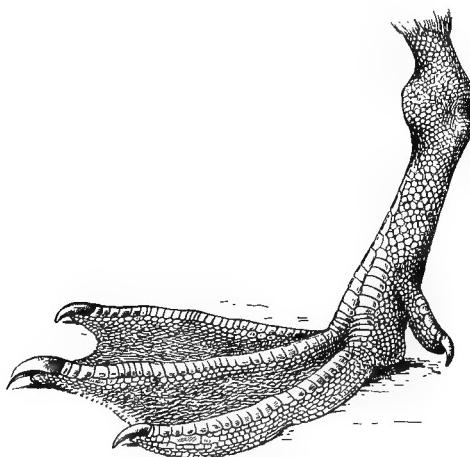


FIG. 34.—Left foot of *Sarcidiornis melanonota*. $\times \frac{1}{2}$

613. *Sarcidiornis melanonota*. Knob-billed Duck.

Anser melanotus, Pennant, *Ind. Zool.* p. 12, pl. xi (1769).

Sarkidiornis africanus, Eyton, *Mon. Anat.* p. 103 (1838); Layard, *B. S. Afr.* p. 347 (1867); Ayres, *Ibis*, 1871, p. 266; 1880, p. 112; Barratt, *Ibis*, 1876, p. 214; Holub & Pelzeln *Orn. Süd-Afr.* p. 321 (1882); Sharpe, ed. Layard's *B. S. Afr.* p. 752 (1884); Nicolls and Eglington, *Sportsm. S. A.*, p. 123, pl. xii, fig. 64 (1892); Blaauw, *Ibis*, 1904, p. 74.

Sarkidiornis melanotus, Gurney in Andersson's *B. Damaral.* p. 335 (1872); Shelley, *Ibis*, 1882, p. 367 [Molopo River]; Bryden, *Gun and Camera*, p. 405 (1893); Fleck, *Journ. Ornith.* 1894, p. 380; Reichenow, *Vög. Afr.* i, p. 129 (1900).

Sarkidiornis melanonota, Garrod, *P. Z. S.* 1875, p. 152, fig. 1-2 (trachea); P. L. Slater, *P. Z. S.* 1876, p. 694, pl. 67; Trimen, *P. Z. S.* 1877, p. 683; Oates, *Matabeleland*, pp. 91, 327 (fig. of head) (1881); Salvadori, *Cat. B. M.* xxvii, p. 54 (1895); Shelley, *B. Afr.* i, p. 170 (1896); Marshall, *Ibis*, 1900, p. 268; Alexander, *Ibis*, 1900, p. 443; Oates, *Cat. B. Eggs*, ii, p. 142 (1902).

"Comb-duck" of some authors.

Description. *Adult Male.*—Head, neck all round and whole of the under surface white, except the sides and flanks, which are greyish; the sides of head and neck with metallic purplish spots which on the top of the head and along the nape coalesce and form a black band; the feathers along this region erect and curly; upper surface of the body black, glossed with purple, green and coppery metallic sheen on the scapulars, wing coverts and tail; a whitish patch in the centre of the back. According to Böhm the male, during the breeding season, has a bunch of orange yellow feathers on the sides of the lower abdomen.

Iris dark brown; bill, on which is an erect compressed semi-circular elevation, black; legs dark plumbeous.

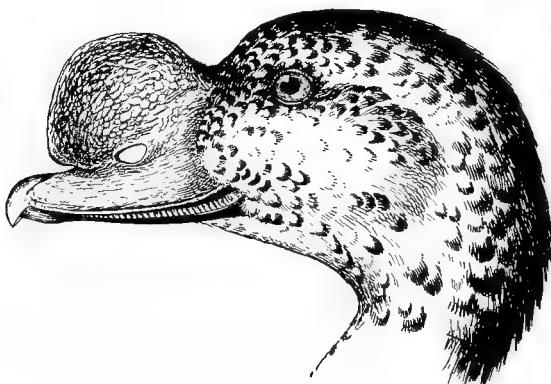


FIG. 35.—Head of *Sarcidiornis melanoptera*, ♂. $\times \frac{1}{2}$

Length about 31·0; wing 14·5; tail 6·0; culmen 3·0; tarsus 2·25. Excrescence on the bill, length along base 2·0, height 1·75, present in the breeding season, inconspicuous at other times of the year.

The female is like the male but smaller; the head and neck is more spotted and there is less metallic gloss; the excrescence on the bill is absent; wing 11·0 to 11·5. The young bird is like the female but without any metallic gloss.

Distribution.—The Knob-billed Duck is found in India, including Ceylon and Burma, and also throughout Africa from Gambia and Khartoum southwards, as well as in Madagascar.

Its headquarters in South Africa are in Bechuanaland about Lake Ngami and the Upper Zambesi, where it appears to be fairly

common ; elsewhere it occurs only as a straggler, while it has only been met with since south of the Orange River.

The following are recorded localities : Cape Colony—Kleinmont River in Bathurst division (Layard), Molopo River near Mafeking, January (Ayres) ; Transvaal—Potchefstroom (Barratt & Ayres), Rustenburg (Ayres) ; Bechuanaland—Lake Ngami, throughout the year (Andersson), Botletli River (Bryden), Kanye (Nicolls & Eglington),^{*} Tati River (S. A. Mus.) ; Rhodesia—Ramaquaban River, March (Oates), Upper Zambesi (Bradshaw), Upper Mazoe, rare (Marshall), Kafue River (Alexander) ; German South-west Africa—Great Namaqualand and Damaraland in rainy season, Okavango River throughout the year (Andersson), Reheboth, in rains (Fleck).

Habits.—Little of special interest has been recorded about this curious looking Duck in South Africa ; it is usually met with in flocks where plentiful, flying in the V shaped formation, and it not infrequently perches on dry, dead trees, at which times it is not very difficult to approach ; it is said by most sportmen to be exceedingly good eating, surpassing both the Spur-wing and the Egyptian Goose in this respect. It apparently breeds in Bechuanaland, though no one has hitherto given any account of the matter ; eggs laid in captivity in Holland, in Mr. Blaauw's garden, were yellowish-white and rather more pointed at one end than the other ; they were not hatched, however, and proved to have been unfertilized.

There are six eggs of this species in the British Museum, obtained by Mr. Andersson at Ondonga, in Ovampoland, in February ; they are described as being smooth, rather glossy and pale yellowish-white, and measure from 2·58 to 2·22 × 1·78 to 1·65.

Genus III. NETTOPUS.

Type.

Nettapus , Brandt, Descr. Icon. Anim. Ross. Nov., Aves, fasc. i, p. 5 (1836) ...	N. auritus.
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Bill very short and deep, depth at the base about equal to the culmen without the nail ; nostrils oval, near the base of the bill ; wings moderate and pointed, the first three primaries subequal ; tail very short and pointed, of twelve feathers ; legs placed very far back, tarsus with a row of transverse scutes in front, a good deal shorter than the anterior toes ; hind toe slender, with a narrow but distinct lobe ; size very small, plumage glossy, sexes distinct.

Four species spread over the Ethiopian, Oriental and Australian regions are generally recognised. Only one of these inhabits Africa

614. **Nettopus auritus.** *Dwarf Goose.*

Anas aurita, *Bodd. Tabl. Pl. Enl.* p. 48 (1783).

Anas madagascariensis, *Gmel. Syst. Nat.* i. p. 522 (1788).

Nettapus madagascariensis, *Gurney, Ibis*, 1859, p. 251 [Natal]; *Layard, B. S. Afr.* p. 348 (1867); *id. Ibis*, 1869, p. 377; *Ayres, Ibis*, 1877, p. 354.

Nettapus auritus, *Kirk, Ibis*, 1864, p. 336; *Gurney in Andersson's B. Damaral.* p. 336 (1872); *Oates, Matabeleland*, p. 327, fig. on p. 243 (1881); *Holub & Pelzeln, Orn. Süd-Afr.* p. 328 (1882); *Sharpe, ed. Layard's B. S. Afr.* p. 750 (1884); *Ayres, Ibis*, 1886, p. 297; *Nicolls and Eglington, Sportsm. S. A.* p. 122 (1892); *Bryden, Gun and Camera*, p. 406 (1893); *Fleck, Journ. Ornith.* 1894, p. 380; *Salvadori, Cat. B. M.* xxvii. p. 65 (1895); *Shelley, B. Afr.* i, p. 170 (1896); *Woodward Bros. Natal B.* p. 208 (1899); *W. L. Slater, Ibis*, 1899, p. 114 [Inhambane]; *Marshall, Ibis*, 1900, p. 269; *Reichenow, Vög. Afr.* i. p. 127 (1900); *Hellmayr, Journ. Ornith.* 1902, p. 237 [Sibani].

Description. *Adult Male.*—Forehead, sides of the face, chin, throat and an almost complete ring round the middle of the neck white; crown and a narrow band down the back of the neck dark metallic-green, separating a pale green patch on either side of the

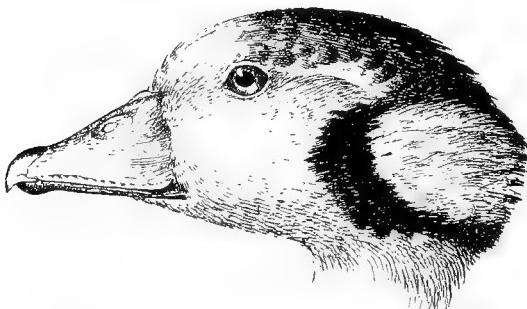


FIG. 36.—Head of *Nettopus auritus*, ♂. $\times \frac{11}{12}$

neck; this is again separated by a narrow line of black from the white of the face and throat; lower neck all round, sides of the body and flanks rufous-chestnut, slightly speckled with green on the lower hind neck; the lower breast and abdomen pure white, and

the under tail-coverts dark brown; upper surface, including the tail-coverts and most of the wing-coverts dark metallic-green, the primaries and tail-quills black, the outer primary coverts and some of the outer secondaries white, forming a longitudinal white band in the closed wing.

Iris dark brown to bluish; bill bright yellow with a very dark brown nail; legs and feet bluish-black, shading on the hinder part of the legs to yellowish.

Length about 12·5; wing 6·25; tail 3·0; tarsus 1·0; culmen 1·0.

The female is duller in colour throughout, the forehead and sides of the face are spotted and mottled with brown; there is no pale green patch or black crescentic boundary line on the sides of the neck, the green and cinnamon freckling of the lower hind neck and the upper tail-coverts is more noticeable.

Iris dark brown, almost black; bill dusky yellowish, shading to almost black at the tip; lower mandible livid; legs bluish black; dimensions about the same as in the male.

Distribution.—Africa, south of the Gambia on the west, and of Lamu on the east, as well as Madagascar, is the area of the range of the African Dwarf Goose.

In South Africa it is a casual visitor to the Colony, and only met with along the coast and larger rivers, but is more frequently to be seen in Natal and the Transvaal up to the Zambesi. It is not recorded from German South-west Africa, though fairly plentiful about Lake Ngami.

The following are recorded localities: Cape Colony—Mossel Bay (S. A. Mus.), Port Elizabeth, rare (Brown), Grahamstown (Layard), Alexandria and King Williams Town (S. A. Mus.); Natal—Umgene, near Howick, Umsindusi near Maritzburg, Clairmont, near Durban (Woodward), Zululand (Brit. Mus.); Transvaal—near Potchefstroom, April, June (Ayres); Bechuanaland—Lake Ngami (Andersson), Nocana, July (Fleck), Botletli River (Bryden); Rhodesia—Sibani in Eastern Matabeleland (Penthal), Upper Zambesi (Holub and Bradshaw), Mashonaland, not very common (Marshall); Portuguese East Africa—Inhambane, September (Francis).

Habits.—The Dwarf Goose is usually found in small flocks which haunt some quiet lagoon near a river or lake; it is a good diver and seldom leaves the neighbourhood of water. It is not very shy, and at certain seasons is fat and pretty good eating. No observer has yet described its breeding habits in South Africa.

Although the bill of this bird is shaped somewhat like that of a goose, it differs widely from the Geese in structure and habits. It is rarely seen on land and is a good swimmer and diver, whereas the true geese are good walkers and essentially land-feeders.

Genus IV. DENDROCYCNA.

Type.

Dendrocygna, Swains. *Class. B.* ii. p. 365 (1837).....*D. arcuata*.

Bill moderate, depth at the base less than half the total length ; of nearly equal width throughout, but slightly broader about two-thirds of the way down ; a strong downwardly-pointed nail ; wings rounded, second and third primaries usually the longest but these are all generally shorter than the longest primaries ; no speculum ; tail short and rounded, of sixteen feathers ; tarsus long and strong, about the same length as the inner toe without claw, covered with reticulate scales in front as well as on the sides ; hind toe narrowly lobed ; trachea with an osseous bulb in the males.

Nine species of this genus, which is spread over the tropical regions of both hemispheres, are recognised by Salvadori ; two of these are found in Africa, and both of them occur within our limits.

Key of the Species.

- A. Anterior half of head and throat white, hinder half black *D. viduata*, p. 124.
- B. Head rufous brown, becoming paler on the chin and throat *D. fulva*, p. 126.

615. **Dendrocygna viduata.** *White-faced Duck.*

Anas viduata, Linn. *Syst. Nat.* i. p. 205 (1766).

Dendrocygna viduata, Gurney, *Ibis*, 1859, p. 251, 1862, p. 158 [Natal] ; Layard *B. S. Afr.* p. 349 (1867) ; Gurney in Andersson's *B. Damara*, p. 338 (1872) ; Barratt, *Ibis*, 1876, p. 214 ; Holub & Pelzeln, *Orn. Süd-Afr.* p. 328 (1882) ; Sharpe, ed. Layard's *B. S. Afr.* p. 751 (1884) ; W. Ayres, *Ibis*, 1887, p. 64 ; Nicolls and Eglington, *Sportsm. S. A.* p. 126 (1892) ; Bryden, *Gun and Camera*, p. 407 (1893) ; Fleck, *Journ. Ornith.* 1894, p. 380 ; Salvadori, *Cat. B. M.* xxvii. p. 145 (1895) ; Shelley, *B. Afr.* i, p. 171 (1896) ; Woodward Bros., *Natal B.* p. 209 (1899) ; Alexander, *Ibis*, 1900, p. 443 ; Reichenow, *Vög. Afr.* i. p. 124 (1900).

" Masked Duck " of some authors.

Description. Adult Male.—Front half of the head, sides of the face and chin, and a separate patch in the middle of the neck in front white; hinder half of the head, back of the neck and a band across the middle of the throat black; lower half of the neck all round, upper breast and ulnar portion of the wing rich maroon, becoming brown on the upper back and scapulars, the feathers becoming edged and banded with fulvous; a chestnut patch in the middle of the back; primaries black, secondaries and rest of the wing olive brown; lower back, tail-coverts and tail and whole of the centre of the breast and abdomen black; sides of the body and flanks banded black and white.

Iris hazel (black according to Alexander); bill black, with an irregular transverse bar near the tip leaden-blue; legs and feet leaden.

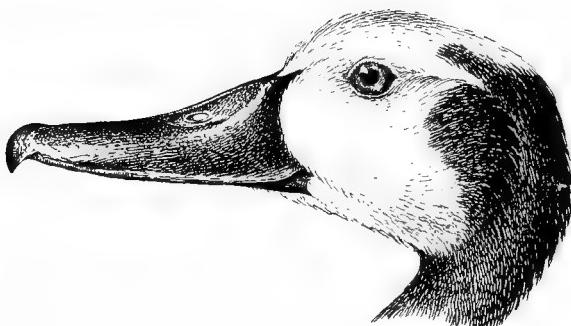


FIG. 37.—Head of *Dendrocygna viduata*. $\times \frac{1}{3}$

Length about 19·0; wing 9·5; tail 2·5; tarsus 2·15; culmen 2·0.

The female resembles the male; the young bird has the abdomen whitish mixed with black.

Distribution.—This Duck has a rather remarkable range, being found throughout the greater part of South America from the West Indies to the Argentine, and in Africa, south of the Sahara, from the Gambia and Khartoum downwards, as well as in Madagascar.

Except in the Lake regions and on the Zambesi this is a rare Duck in South Africa, and has hitherto not been met with within the limits of Cape Colony or in Great Namaqualand or Damaland.

The following are recorded localities: Natal—Umlazi River

mouth, June (Ayres), Durban Harbour (Woodward); Transvaal—near Potchefstroom, rare, November (Ayres and Barratt); Bechuanaland—Okavango River and Lake Ngami (Andersson), Botlethi River (Bryden), Nocana, July (Fleck); Rhodesia—Upper Zambesi (Bradshaw and Holub); Portuguese East Africa—Zumbo (Alexander), Inhambane, December (Francis, in S. A. Mus.).

Habits.—This Duck is gregarious, occurring in flocks usually of considerable size on the lagoons and streams along the coast and up some of the more considerable rivers, such as the Zambesi and Okavango. Though not a regular migrant its numbers appear to be reinforced in these districts during the rainy season, or in the case of the Lake-regions, during the annual inundations in the winter; it is then to be met with in very large flocks.

Its voice is a clear sibilant whistle, generally heard when the birds are on the wing in early morn or late at night. These ducks appear to be somewhat stupid and to be easily caught; their flesh is very good eating.

The Woodwards, as also Nicolls and Eglington, state that this species perches on trees; this, however, is contradicted by Reichenow and von Heuglin, who both distinctly assert that they have never observed this habit. Nothing appears to be known about the breeding of this species in South Africa, but there are eggs from Madagascar in the British Museum; they are glossy and cream-coloured, and measure about $2\cdot0 \times 1\cdot5$.

616. *Dendrocygna fulva*. Whistling Duck.

Anas fulva, *Gmel. Syst. Nat.* i. p. 530 (1788).

Dendrocygna fulva, *Holub & Pelzeln, Orn. Süd-Afr.* p. 328 (1882); *Fleck, Journ. Ornith.* 1894, p. 380; *Salvadori, Cat. B. M.* xxvii. p. 149 (1895); *Shelley, B. Afr.* i. p. 171 (1896); *Reichenow, Vög. Afr.* i. p. 126 (1900).

Description. Adult.—Head, neck and below throughout pale rufous-brown, almost white on the chin and throat, darkest on the crown, the hinder feathers of which are slightly crested; a narrow, almost black line runs down the back of the neck; wings and back black, the feathers of the upper back and scapulars broadly tipped with rufous-brown; lesser coverts and feathers along the edge of the wing maroon; upper and lower tail-coverts white; tail black.

Iris dark brown; bill bluish-black; legs slaty-blue.

Length about 19·5; wing 9·5; tail 2·0; culmen 2·0; tarsus 2·0.

The sexes are alike; young birds have very little maroon on the lesser wing-coverts, the under parts paler and the upper tail-coverts margined with brown.

Distribution.—The Whistling Duck has a very remarkable disconnected range, extending over four continents; it is met with in the southern part of the United States and Mexico in North America, from Venezuela and Peru to the Argentine in South America, from Kordofan southwards along the Nile Valley, through Nyasaland, to Lake Ngami in Africa, in Madagascar, and finally in India, Ceylon and Burma.

The first notice of its occurrence within our limits is that of Holub, who obtained from Walsh a specimen shot at Sesheke on the Upper Zambesi in the month of January; there is a pair in the South African Museum obtained by Mr. Eriksson, the one labelled Botletli River, July, 1885, the other, Tebra Country, near Lake Ngami, April, 1884, while the German traveller, Fleck, also brought an example from Lake Ngami, shot in August. Mr. A. D. Millar tells me that there is an example of this species in the Durban Museum, obtained by himself in that neighbourhood some years ago.

Genus V. **ALOPOCHEN.**

Type.

Chenalopex , <i>Stephens</i> (<i>nec Vieill.</i>), <i>Gen. Zool.</i> xii.	
pt. 2, p. 41 (1824)	<i>A. aegyptiacus.</i>
Alopochen , <i>Stejn.</i> , <i>Standard Nat. Hist.</i> iv. p. 141 (1885)	<i>A. aegyptiacus.</i>

Bill stout, short and deep, its depth at the base about half the length of the culmen; no prominent lamellæ at the edges of the bill; nostrils oval; wing long and pointed, reaching nearly to the end of the tail, a metallic speculum formed by the secondaries in front, a blunt osseous callosity at the bend of the wing; tail of fourteen feathers, broad and square; tarsus long and strong, considerably exceeding all the toes, with a narrow line of transverse scutes in front; hind toe with a narrow lobe; an osseous bulb at the base of the trachea in the male.

This genus contains two species only—the type here described and *A. jubatus* from tropical South America.

617. *Alopochen aegyptiacus*. *Bery Gans.*

Anas aegyptiaca, Linn., *Syst. Nat.* 12th ed. i, p. 197 (1766); *Burchell, Travels*, i, p. 283, ii, p. 346 (1822-24); *Livingstone, Miss. Travels*, p. 254 (1857); *Grill, K., Vet. Akad. Handl.* ii, no. 10, p. 56 (1858).
Chenalopex aegyptiacus, Kirk, *Ibis*, 1864, p. 336; *Layard, B. S. Afr.* p. 347 (1867); *Gurney, Ibis*, 1868, p. 49 [Natal]; *Layard, Ibis*, 1869, p. 377; *Gurney, in Andersson's B. Damaral.* p. 335 (1872); *Buckley, Ibis*, 1874, p. 390; *Shelley, Ibis*, 1882, p. 367 [Mashonaland]; *Butler, Feilden and Reid, Zool.* 1882, p. 427; *Holub & Pelzeln, Orn. Süd-Afr.* p. 322, fig. of bird on nest (1882); *Sharpe, ed. Layard's B. S. Afr.* p. 747 (1884); *Nicolls and Eglington, Sportsm. S. Afr.* p. 122 (1892); *Salvadori, Cat. B. M.* xxvii, p. 167 (1895); *Shelley, B. Afr.* i, p. 171 (1896); *Woodward Bros., Natal B.* p. 209 (1899); *Alexander, Ibis*, 1900, p. 443; *Reichenow, Vog. Afr.* i, p. 181 (1900); *Witchead, Ibis*, 1903, p. 287; *Shortridge, Ibis*, 1904, p. 207.

"Egyptian or Nile Goose" of some authors; "Esikwi" of Kafirs (Lawrence) a name also applied to the Spur-winged Goose; "Lefalva" of Basutos (Murray).

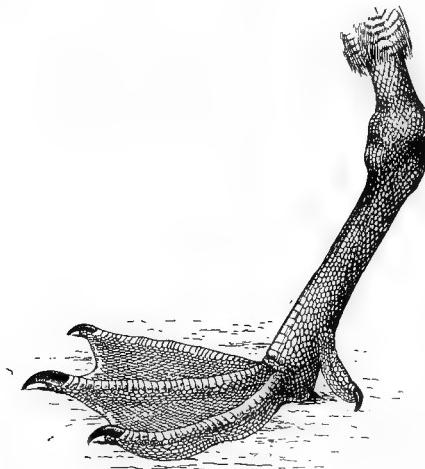


FIG. 38.—Left foot of *Alopochen aegyptiacus*. $\times \frac{2}{3}$

Description. Adult female.—Crown, lower cheeks and throat dirty white, becoming darker and browner on the nape; edging round the base of the bill, a patch round the eye, an irregular ring round the middle of the neck and patch in the middle of the breast chestnut; lower neck all round, sides of the body, flanks and thighs, grey, finely mottled with narrow transverse bands of black; centre of the abdomen white, becoming very pale chestnut on the

under tail-coverts; centre of the back, upper tail-coverts, tail, primaries and outer secondaries black, the latter glossed with metallic green and purple, inner secondaries dark rufous; whole of the wing-coverts white, the greater series with a narrow subterminal black band.

Iris orange to crimson; bill light pink, darker or pinky-brown on the tip, margins and base; legs pink.

Length 28; wing 16; tail 5·25; tarsus 3·30; culmen 2·5; weight of a male $5\frac{1}{2}$ lbs., of a female 4lbs. (Ayres).

The sexes are alike, except that the female is slightly smaller.

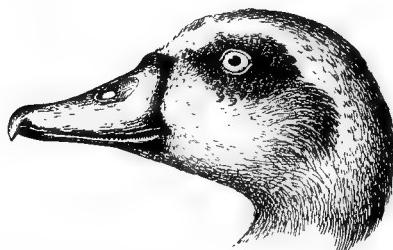


FIG. 39.—Head of *Alopochen aegyptiacus*. $\times \frac{2}{3}$

Distribution.—The Egyptian Goose or Berg Gans is found throughout Africa south of the Sahara, while to the north-east its range extends through Nubia and Egypt as far as Palestine. It does not occur in Madagascar. In England and on the Continent of Europe it has been met with from time to time, but this is probably due to escapes from captivity, in which state it is often kept.

In South Africa this is by far the commonest of the larger Ducks, and is to be found throughout the whole country, both on the coasts, along the rivers, and on ponds and vleis.

The following are recorded localities; Cape Colony—Verloren Vlei in Piquetberg, Vogel Vlei in Paarl, Bot River mouth in Caledon, Gouritz River in Mossel Bay and Keurboom River in Knysna (Layard), King Williams Town, rare (Trevelyan), Port St. John's, July (Shortridge), Zak River in Fraserburg, September, and near Kuruman (Burchell), Orange River mouth (Howard), near Upington, breeding in October (Bradshaw), near Aliwal North, February (Whitehead); Natal—Newcastle, October (Butler), Ifafa and near Maritzburg, rare (Woodward); Basutoland (Murray); Transvaal—

Limpopo River (Buckley and Eriksson); Rhodesia—Upper Zambesi (Bradshaw and Livingstone), Mashonaland (Ayres): German South-west Africa—Great Namaqualand and Damaraland, common resident (Andersson); Zambesi (Kirk and Alexander).

Habits.—The Berg Gans, or as it is generally called in Europe, the Egyptian Goose, has been known from remote antiquity; it is often figured on the monuments of ancient Egypt, where it was domesticated, and although not itself sacred was the emblem of Seb, the father of Osiris. It was well known to the Greeks, from whom it obtained the name of Chenalopex (*i.e.*, Fox Goose), possibly on account of its colour, or perhaps because it was supposed to build in burrows, a habit more strictly attributed to the Sheldrakes.

In South Africa it is, as a rule, found alone or in pairs, though at certain seasons of the year large numbers assemble at the vleis to breed and moult their flight feathers. It is a shy and wary bird, feeding early and late on grassland, and retiring to roost at night among thick rushes. Its cry is described by Andersson as a “barking quack,” and is heard when the bird is on the wing. The flesh is dark, coarse and unpalatable.

In a choice of a breeding site the Berg Gans shows considerable differences; sometimes the nest is placed among thick rushes on the ground, at other times in a hollow tree standing near a river bank, while Mr. Atmore relates that he came across nests built on broad ledges of rock 200 feet above the banks of the Gouritz River in the Mossel Bay district, and that this site was amicably shared with numerous Vultures (*Gyps kolbii*); Eriksson found a nest on a small island in the Limpopo River on the 17th of September; it was thickly lined with down and contained eight eggs much incubated. There are two eggs of this species in the South African Museum, obtained by Mr. Bradshaw on October 28th, from a nest built on an island in the Orange River near Upington; the number of eggs found was five, and they are described as having been quite fresh. They are pure white, smooth, and somewhat shiny, and small for the size of the bird, measuring 2·65 × 1·85.

This bird is well known in Zoological Gardens, and has been more or less acclimatised in England, where it may sometimes be seen on ornamental waters. It has frequently hybridised with the Spur-winged Goose, and even occasionally with the Mallard.

Genus VI. CASARCA.

Casarca, Bp., Comp. List, p. 56 (1838)..... *C. rutila.*

Bill rather short, high at the base but with a nearly straight culmen and about the same breadth throughout; lamellæ at the edges of both mandibles prominent and conspicuous; nail small and blunt; wings long and pointed, first primary the longest, a conspicuous speculum, formed by the outer webs of the secondaries; an osseous callosity at the bend of the wing; tail of fourteen feathers, short and nearly square; tarsus about equal to the middle toe and claw, covered with reticulate scales, those along the middle line in front on the lower half slightly broader than the others, and forming a transverse row of scutes; hind toe with a very narrow lobe; prevailing coloration chestnut; sexes dissimilar.

This genus, containing the Sheldrakes or Shelducks, consists of four species, and is spread all over the Old World, including Australia. One species only is found in South Africa, though the Ruddy Sheldrake (*C. rutila*) comes as far south as Abyssinia during the northern winter.

618. **Casarca cana.** *South African Shelduck.*

Gray-headed Duck, *Brown, New Illustr. Zool.* pp. 802, 104, pls. 41-2 (1776).

Anas cana, Gmel., Syst. Nat. i, p. 510 (1788).

Casarca cana, P. L. Sclater, P. Z. S. 1859, p. 442, pl. clviii. (hybrid with *Tadorna cornuta*); *Gurney, Ibis*, 1868, p. 262; *Ayres, Ibis*, 1871, p. 266, 1885, p. 350; *Sharpe, ed. Layard's B. S. Afr.* p. 753 (1884); *Symonds, Ibis*, 1887, p. 335; *Nicolls and Eglington, Sportsm. S. Afr.* p. 129 (1892); *Salvadori, Cat. B. M.* xxvii, p. 182 (1895); *Shelley, B. Afr.* i, p. 171 (1896); *Reichenow, Vög. Afr.* i, p. 187 (1900); *Whitehead, Ibis*, 1903, p. 237; *Sharpe, Ibis*, 1904, p. 17 [Deelfontein]; *Shortridge, Ibis*, 1904, p. 207.

Casarca rutila (nec Pall., Layard, B. S. Afr., p. 350 (1867).

"Berg-eend" of the Dutch.

Description. *Adult male.*—Head and neck all round dark ashy-grey; mantle, scapulars, outer webs of the inner secondaries and lower parts throughout, rufous-chestnut, paler on the mantle, breast and under tail-coverts; centre of the back, tail-coverts, tail, primaries and primary-coverts black, the back vermiculated with rufous; outer secondaries metallic-green on the outer web, ashy-black on the inner, with a good deal of white towards their bases; wing-

coverts, edge of the wing, under wing-coverts (except the greater series, which are ashy-black) and axillaries pure white.

Iris pale yellow; bill and legs black.

Length about 26; wing 15; tail 5·0; culmen 2·0; tarsus 2·4.

The female is smaller than the male and has the front of the face white, including the forehead, patch round the eye and chin; wing 13; culmen 1·75; tarsus 1·90.

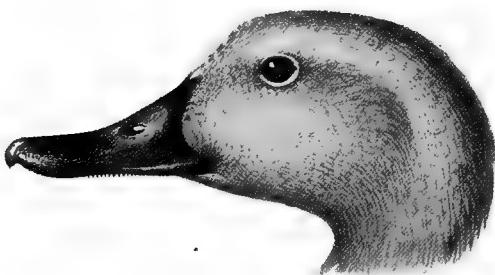


FIG. 40.—Head of *Casarca cana*, ♂. $\times \frac{1}{2}$

Distribution.—This Shelduck has a very restricted range and seems to be most common on the high plateau of the Colony and about the Orange River. It has been met with hitherto only in Cape Colony, the Orange River Colony and the Transvaal, and appears to be absent from Natal, Rhodesia and German South-west Africa.

The following are recorded localities: Cape Colony—Cape flats, Berg River and Beaufort West (S. A. Mus.), Deelfontein (Seimund); Orange River Colony—Kroonstad, March, not plentiful (Symonds), Basutoland fairly common (Murray); Transvaal—Potchefstroom, July (Ayres).

Habits.—The Berg-eend is generally considered rather a scarce bird, but Messrs. Grant and Seimund found it very common all the year round at Deelfontein in the centre of the Karoo; it is generally met with in pairs, but it is not unusual to see half a dozen together on a dam, feeding or resting; it is frequently caught when young and domesticated by the farmers in South Africa, and it bears captivity very well; it also hybridises freely with other species. A female, formerly in the Zoological Gardens of London, bred first of all with a Ruddy Shelduck, afterwards with one of her own hybrid offspring, and finally with a common Shelduck (*Tadorna*

cornuta). The result of the last union was a rather remarkable bird, figured in the Proceedings of the Zoological Society (1859, pl. 158), hardly resembling either of the parents and possessing dusky-grey flanks somewhat reminding one of the Australian species (*Casarca tadornoides*).

Grant and Seimund found the nest of this species in the hole of an Ant bear or Porcupine on the veld ; the clutch is from eight to ten eggs. The colour is creamy-white and the measurements 2·5 to 2·0 × 1·8 to 1·9. Whitehead states that an officer told him that he had found a nest among the rocks above the river near Aliwal North. It is also generally stated that the young when hatched are carried down to the water by the female on her back.

Genus VII. ANAS.

	<i>Type.</i>
Anas , Linn., <i>Syst. Nat.</i> i, p. 194 (1766)	A. boschas.

Bill moderate, about as long as the head, culmen nearly straight, sides nearly parallel, perhaps slightly broadening towards the tip ; nail not prominent ; wing long and pointed with a conspicuous metallic green and blue speculum, formed by the outer secondaries ; tail rather short and graduated, of from sixteen to twenty feathers, which are sometimes stiff and narrow ; tarsus shorter than the middle and outer toes, about equal to the inner one, with a row of transverse shields in front ; hind toe narrowly lobed ; plumage generally mottled.

Authorities are at considerable differences as regards the limits of this cosmopolitan genus ; Salvadori and Sharpe include only seventeen species, while Reichenow, putting together several genera recognised by the former authors, considers that fifty-one species should be assigned to the genus.

For convenience of reference a key is here given of the five species of South African Ducks included in the genus in its wider significance ; these are all resident birds ; none of the European migratory forms extend their winter range so far south.

Key of the Species.

- A. Larger, wing 8 to 13.
 - a. Speculum green and black.
 - a¹. Bill yellow, with black on the culmen, legs black A. *undulata*, p. 134.

- b¹. Bill slaty with black on the culmen, legs yellow, webs black *A. sparsa*, p. 136.
- c¹. Bill crimson with base and edges black, legs dirty yellow *N. capense*, p. 138.
- b. Speculum salmon pink.
 - a.¹ Bill pink with a brown central stripe; legs dirty grey *P. erythrorkyncha*, p. 141.
- B. Smaller, wing about 6 ; speculum bright green ; bill black and leaden..... *N. punctatum*, p. 139.

619. *Anas undulata*. Geelbec or Yellow Bill.

Anas flavirostris (*nec Vieill.*) *Smith*, *Cat. S. A. Mus.* p. 36 (1837); *id. Illustr. Zool. S. A. Aves*, pl. 96 (1844); *Layard*, *B. S. Afr.* p. 352 (1867); *Gurney*, *Ibis*, 1868, p. 49 [Natal]; *Buckley*, *Ibis*, 1874, p. 390; *Bryden*, *Gun and Camera*, pp. 349, 404 (1893).

Anas undulata, *Dubois*, *Orn. Gall.* p. 119, pl. 77 (1839); *Salvadori*, *Cat. B. M.* xxvii, p. 212 (1895); *Shelley*, *B. Afr.* i, p. 172 (1896); *Woodward bros.*, *Natal B.* p. 209 (1899); *Reichenow*, *Vög. Afr.* i, p. 113 (1900); *Marshall*, *Ibis*, 1900, p. 269; *Oates*, *Cat. B. Eggs* ii, p. 165, pl. vi, fig. 5 (1902); *Shortridge*, *Ibis*, 1904, p. 207.

Anas xanthorhyncha, *Forst.*, *Descr. An.* p. 45 (1844); *Pelzeln*, *Novara Reise*, *Vögel*, p. 138 (1865); *Gurney*, *in Andersson's B. Damara* p. 342 (1872); *Ayres*, *Ibis*, 1874, p. 105, 1880, p. 272; *Oates*, *Matabeleland*, p. 327 (1881); *Shelley*, *Ibis*, 1882, p. 368 [Mashonaland]; *Holub & Pelzeln*, *Orn. Süd-Afr.* p. 329 (1882); *Butler*, *Feilden and Reid*, *Zool. 1882*, p. 427; *Sharpe*, *ed. Layard's B. S. Afr.* p. 755 (1884); *Nicolls and Eglington*, *Sportsm. S. A.* p. 127, pl. xii, fig. 60 (1892); *Fleck*, *Journ. Ornith.* 1894, p. 381.

Description.—*Adult male*.—General colour dark ashy-brown, the head and neck finely streaked with whitish; the feathers of the upper part of the body narrowly, those of the lower broadly edged with white, so that the whole bird has a mottled appearance; primaries dark brown, outer secondaries metallic-green or blue on the outer web, forming a conspicuous speculum, a few of the inner secondaries rich velvety black on the outer web forming a margin to the speculum; tail of sixteen feathers, which are rather narrow and pointed, especially the central pair.

Iris hazel; bill yellow, black along the middle of the culmen and at the tip; legs black.

Length 22·5; wing 9·7; tail 3·0; culmen 2·0; tarsus 1·5. The sexes are alike.

Distribution.—This is certainly the commonest Duck throughout the greater part of South Africa, and is found everywhere except

perhaps in German South-west Africa and along the Natal sea board. It appears to be partially migratory, its movements depending on rainfall. Beyond our limits its range extends as far only as Angola on the west, but through Nyasaland and Central Africa as far as Abyssinia on the east.

The following are recorded localities : Cape Colony—Cape and Mossel Bay division (S. A. Mus.), Vogel vlei in Paarl, Zoetendal's vlei in Bredasdorp, breeding (Layard and S. A. Mus.), Port Elizabeth, fairly common (Brown), East London, rare (Wood), King Williams Town (Trevelyan), St. John's River, April (Shortridge), near Taungs (Holub); Natal—Mooi River, May and Novem-

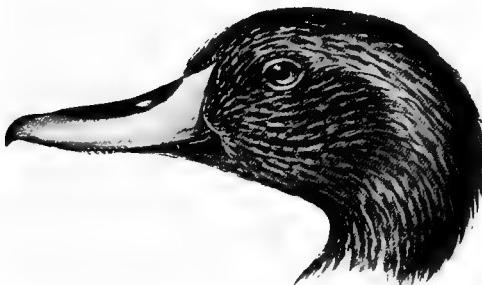


FIG. 41.—Head of *Anas undulata*. $\times \frac{1}{2}$

ber (Buckley and Ayres), Weenen and Maritzburg (Woodward), Newcastle district (Butler); Orange River Colony—Rhenoster River (Ayres), Vredefort Road station (B. Hamilton), Vlakfontein in Harrismith district, breeding April (Sparrow), Basutoland very common (Murray); Transvaal — near Pretoria, June (Oates), Potchefstroom, July, August (Ayres); Bechuanaland — Lake Ngami and Botletli River (Andersson), Nocana on the Okavango, July (Fleck); Rhodesia—Upper Zambesi (Holub), Mashonaland, not common (Marshall).

Habits.—The Geelbec keeps as a rule to marshes, lakes and stagnant water, and avoids running streams; it is usually found in pairs, though sometimes in larger numbers. Layard states that it is very shy and wary, but other observers have found it the reverse in this respect; probably this depends on the amount of molestation to which it is subjected. Its food consists of grass, seeds and vegetable matter, and like other Ducks, it moults its wing feathers all at once during the winter time, and is then careful to remain sheltered in thick cover.

Layard states that this Duck nests on the dry veld away from water in dense bush, and that, as the female sits very close, she is difficult to find. Ayres, on the other hand, states that the nest is built up of dry flags among the rushes, well above the level of the water.

The eggs, generally from six to nine in number, are elliptical, smooth, and vary from a very pale brown to creamy in colour; examples from Zoetendal's vlei in the South African Museum measure 2·27 × 1·75.

620. *Anas sparsa*. *Black Duck.*

Anas sparsa, Smith, Cat. S. Afr. Mus. p. 36 (1837); *id. Illustr. Zool. S. Afr. Aves.* pl. 97 (1844); Grill, K. Vet. Akad. Handl. Stockh. ii, no. 10, p. 56 (1858); Gurney, *Ibis*, 1859, p. 251 [Natal]; Kirk, *Ibis*, 1864, p. 336; Layard, B. S. Afr. p. 352 (1867); Gurney, in Andersson's *B. Damaral.* p. 341 (1872); Ayres, *Ibis*, 1874, p. 105, 1876, p. 433, 1880, p. 273; Buckley, *Ibis*, 1874, p. 391; Oakley, *Trans. S. A. Phil. Soc.* ii, p. 50 (1881); Butler, *Feilden and Reid, Zool.* 1882, p. 427; Holub & Pelzeln, *Orn. Süd-Afr.* p. 330 (1882); Sharpe, ed. Layard's *B. S. Afr.* p. 756 (1884); Nicolls and Eglington, *Sportsm. S. A.* p. 124, pl. xii, fig. 61 (1892); Bryden, *Gun and Camera*, p. 407 (1893); Salvadori, *Cat. B. M.* xxvii, p. 213 (1895); Shelley, *B. Afr.* i, p. 172 (1896); Woodward Bros. *Ibis*, 1898, p. 222; *id. Natal B. p.* 210 (1899); Reichenow, *Vög. Afr.* i, p. 115 (1900); Whitehead, *Ibis*, 1903, p. 237; Sharpe, *Ibis*, 1904, p. 18 [Deelfontein]; Shortridge, *Ibis*, 1904, p. 207.

"Edada" of Amaxosa and Zulus, a name also applied to other species.

Description. Adult Male.—General colour very dark ashy-brown, almost black, somewhat paler below, slightly freckled with greyish about the head and neck; scapulars, tail-coverts and tail-feathers with a few white transverse bands; speculum metallic greenish and purplish, formed by the outer webs of the inner secondaries, surrounded by a velvety black band which is again bordered in front and behind by a white band; tail of 18 feathers which are rather long and broad.

Iris dark brown; bill slaty, stripe down the culmen, tip and two patches on either side of stripe black; lower mandible yellow; legs orange yellow, webs black.

Length (in the flesh) 23·0; wing 9·5; tail 5·0, tarsus 1·5; culmen 1·6; weight about 2 lbs. 8 oz. (Ayres). The female is like the male, but smaller; length (in flesh) 20; wing 9·0; tarsus 1·25; culmen 1·5; weight 2 lbs. 6 oz. (Ayres).

Distribution.—The range of the Black Duck is restricted to Eastern and Southern Africa, from Abyssinia southwards to Cape Colony. It does not reach West Africa except Angola, where it has once been procured by M. de Sousa. In South Africa this duck, though never very abundant, is widely spread throughout Cape Colony, Natal, the Transvaal and Rhodesia, but hitherto it has not been noticed in German South-west Africa except at its extreme southern limits. It appears to be a resident in some districts and a migrant in others; its movements are probably irregular. The following are localities:—Cape Colony—Knysna, July, August (Victorin), Port Elizabeth (Rickard) East London, throughout the year (Wood), St. John's River in Pondoland, summer (Shortridge), Buffalo River at King Williams Town (Trevelyan and Pym), Grahamstown (Bt. Mus.), Deelfontein, April (Seimund), Orange River near Upington, November (Bradshaw), near Aliwal (Whitehead), Hartz River near Taungs (Holub); Natal—Durban (Ayres), Umbilo River near Pinetown, January (Stark), Maritzburg, May (Buckley), Ingagane River near Newcastle, June, July (Reid), Umkusi River in Zululand (Woodward); Basutoland common in mountain streams (Murray); Transvaal—near Pretoria (Buckley), Potchefstroom, March, April, and Lydenburg (Ayres); Bechuana-land—Botletli River (Bryden); Rhodesia—near Victoria (W. L. Slater); German South-west Africa—Great Fish River in Southern Namaqualand (Andersson).

Habits.—The Black Duck is a somewhat solitary species usually seen in pairs or occasionally in small family parties, but never in large flocks. It is essentially a river bird, where these conditions prevail, though in the neighbourhood of Deelfontein, where it is said to be not uncommon, it must make its home on the vleis and dams, as there are no rivers in the neighbourhood. It is somewhat nocturnal in its habits, lying hidden as a rule during the day and issuing forth in the evening. It feeds on grass seeds and probably also on water insects and crustacea, and has a loud quack. When disturbed it rises heavily, like a Pochard, but more often skulks under the reeds along the river beds and endeavours to conceal itself.

Though easily tamed and bearing captivity well this Duck seems to have seldom reached Europe alive, and has never been exhibited in the Zoological Gardens of London.

Little has been recorded about the breeding habits of this species; the Woodwards state that it nests in thick reeds and lays

five or six eggs, and that the young remain with the parents for some time after they are hatched. Colonel Bowker sent eggs to Mr. Layard taken near Maseru in Basutoland in November. These were laid in a nest made in a hollow of rotten wood forming a mass of drift under a willow tree overhanging the banks of the Caledon River; the nest was lined with down from the bird's own breast and contained five eggs ready to hatch; they resembled those of *A. undulata* and measured 2·5 x 1·75. Mr. Pym found a nest containing six eggs in a similar position in a mass of drift under a willow tree on the banks of the Buffalo River near King Williams Town in February.

Genus VIII. NETTION.

Type.

Nettion, Kaup, *Natürl. Syst.* p. 95 (1829) *N. crecca*.

This genus, containing the Common Teal and some other allied species, hardly differs from *Anas*. The bill is narrower and shorter, the size is smaller, and the number of tail-feathers is less—14 to 16 as a rule.

Salvadori places fifteen species in this genus of cosmopolitan distribution. Two of these are residents in South Africa, a third is confined to Madagascar, while the Common Teal of Europe (*N. crecca*) reaches as far south as Abyssinia during the northern winter. The key of the South African species is given under the head of the previous genus, p. 133.

621. Nettion capense. Cape Widgeon.

Anas capensis, Gmel. *Syst. Nat.* i, p. 527 (1788); *Pelz. Novara Reise, Vögel*, p. 138 (1865); *Salvadori*, *P. Z. S.* 1884, p. 172, pl. 13; *Reichenow, Vög. Afr.* i, p. 120 (1900).

Querquedula capensis, Smith, *Cat. S. A. Mus.* p. 37 (1857); Sharpe, ed. *Layard's B. S. Afr.* p. 758 (1884); Shelley, *B. Afr. i*, p. 172 (1896); Whitehead, *Ibis*, 1903, p. 238.

Mareca capensis, Layard, *B. S. Afr.* p. 351 (1867); *id. Ibis*, 1869, p. 76; Ayres, *Ibis*, 1869, p. 302; Gurney, in Andersson's *B. Damaral.* p. 339 (1872); Bryden, *Gun and Camera*, pp. 349, 405 (1893).

Nettion capense, Salvadori, *Cat. B. M.* xxvii. p. 259 (1895).

“Teal-eendje” of the Dutch.

Description. *Adult.*—Head, neck and cheeks whitish, with dark ashy centres to the feathers on the back and sides, nearly pure white on the chin; mantle, back, upper tail-coverts and scapulars

dark ashy, broadly margined with white or fulvous ; below, the white predominating and only the centres of the feathers ashy ; primaries and median and lesser coverts of the wings ashy-brown ; anterior secondaries pure white ; a metallic green and purple speculum formed by the outer webs of the middle secondaries bounded broadly above and narrowly below by a velvety black band and towards the top of the wing by the broad white tips of the greater coverts.

Iris yellow ; bill crimson, base and edge of the upper mandible black ; feet dirty yellow. Length 18·5; wing 8·5; tail 2·75; culmen 1·5; tarsus 1·25. The sexes are alike.

Distribution.—The Cape Widgeon, though known from the earliest period of systematic zoology, appears to be everywhere a scarce bird and to have been but seldom met with ; its range extends from Cape Colony northwards through Nyasaland and Uganda to Shoa. In South Africa it has not been hitherto met with in the eastern portion of the Colony, Natal or Rhodesia.

The following are recorded localities :—Cape Colony—Cape division, Knysna, Vogel vlei in Paarl division, Beaufort West (Layard), near Simons Town (Novara Expedition), Orange River near Aliwal North, May (Whitehead) ; Transvaal—August (Ayres) ; Bechuanaland—Botletli River (Bryden) ; German South-west Africa, scarce generally but common at Walvisch Bay (Andersson), Reheboth, December (Fleck).

Habits.—Nothing appears to be known about the habits of this species ; it is probably frequently confused with the “ Smee Eendje or Red-bill, which it resembles in the colour of its bill, but from which it can be distinguished at a glance by its metallic-green speculum and by its spotted cheeks.

Mr. Layard found a nest containing one egg, probably belonging to this species, at Vogel vlei in the Paarl division. The egg was a dirty greenish-white throughout and measured 1·80 × 1·5.

622. *Nettion punctatum*. *Hottentot Teal*.

Anas punctata, *Burchell, Travels*, i, p. 283 (1822) ; *Newton, P. Z. S.* 1871, p. 649 ; *Reichenow, Vög. Afr.* i, p. 120 (1900).
Querquedula hottentota, *Smith, Cat. S. A. Mus.* p. 37 (1837) ; *id. Illustr. Zool. S. Afr. Aves*, pl. 105 (1845) ; *Gurney, Ibis*, 1862, p. 154, 1868, pp. 262, 471 [Natal and Potchefstroom] ; *Layard, B. S. Afr.* p. 353 (1867) ; *Ayres, Ibis*, 1880, p. 273 ; *Butler, Feilden and Reid, Zool.* 1882, p. 427 ; *Sharpe, ed. Layard's B. S. Afr.* p. 757 (1884) ; *Nicolls*

and Eglington, Sportsm. S. A. p. 128, pl. xii, fig. 65 (1892); *Bryden Gun and Camera*, p. 407 (1893).

Nettion hottentota, *Gurney, in Andersson's B. Damaral.* p. 340 (1872).

Anas hottentota, *Fleck, Journ. Ornith.* 1894, p. 381.

Nettion punctatum, *Salvadori, Cat. B. M.* xxvii, p. 265 (1895); *W. L. Sclater, Ibis*, 1899, p. 115 [Inhambane]; *Oates, Cat. B. Eggs*, ii, p. 172 (1902).

Querquedula punctata, *Shelley, B. Afr.* i, p. 172 (1896).

Description. Adult male.—Crown very dark brown, sharply defined from the whitish sides of the face and throat by a clearly marked line running from the base of the bill below the eye; sides of the neck white, thickly mottled with black; mantle, breast and under parts light brown of a fawnly tinge, spotted with blackish-brown centres to the feathers, which become on the middle of the abdomen and under tail-coverts a mottling and barring; middle of the back and tail-feathers black, sides and upper and under tail-coverts finely mottled fawn and black; wings bronzy-green, the primaries and their coverts black; secondaries bright green on the outer web, forming the speculum, largely tipped with white, and with a sub-terminal black band dividing the green and white; under wing-coverts black, the longer ones and the axillaries white.

Iris black; bill along the culmen black, the triangular portion at the sides below the nostrils turquoise, lower mandible leaden, legs turquoise inclining to leaden.

Length (in flesh) 14; wing 6; tail 2·50; culmen 1·45; tarsus 1·0.

The female resembles the male, but is somewhat duller in colour; the young bird is fawn coloured below without spots or bars.

Distribution.—The Hottentot Teal is found in North-east and South Africa, extending from Shoa through Uganda and Nyasaland to Cape Colony. It also occurs in Madagascar and Southern Angola. In South Africa it is by no means common, though apparently rather widely spread, but it has not hitherto been recorded from Rhodesia or the Zambesi Valley.

The following are localities: Cape Colony—Zak River, in Fraserburg division, September (Burchell, type), 100 miles north-west of Cape Town, *i.e.*, Verloren Vlei in Piquetberg? (Smith), Port Elizabeth, rare (Brown); Natal—near Newcastle, November (Butler), Basutoland (Bowker in S. A. Mus.); Transvaal—Potchefstroom, common, November (Ayres); Bechuanaland—Okavango and Lake Ngami, July, August (Fleck), Botletli River (Bryden); German South-west Africa—Omanbonde (Andersson), only in rainy season (Fleck); Portuguese East Africa—Inhambane, September (Francis).

Habits.--This, the smallest of South African Ducks, is found singly or in pairs, in lagoons, but little is known of its habits as it appears to be everywhere a scarce bird.

There are two eggs of this species in the British Museum, obtained by Andersson, in Ovampoland; they are described as oval in shape, smooth, moderately glossy, and of a pale cream colour. They measure 1·7 × 1·3.

Genus IX. PŒCILONETTA.

Type.

Pæcilonitta, *Eyton, Mon. Anat.* p. 32 (1838) *P. bahamensis*.

This genus is also very closely allied to *Anas*, from which it differs chiefly in the colour of the speculum, which is a fawn or salmon colour, the narrow black band at its base perhaps representing the metallic speculum of *Anas*.

Three species are assigned to this genus by Salvadori; two of them from South America and the Galapagos Isles respectively, the third from Africa. This last species is included in the key on p. 133.

623. **Pœcilonetta erythroryncha.** *Red-bill.*

Anas erythroryncha, *Gmel., Syst. Nat.* i, p. 517 (1788); *Burchell, Travels*, i, p. 288, ii, p. 346 (1822-4); *Pelz., Novara Reise*, *Vög.*, p. 188 (1865); *Layard, B. S. Afr.* p. 351 (1867); *Bryden, Gun and Camera*, p. 405 (1893); *id. Nat. and Sport*, p. 42 (1897); *Fleck, Journ. Ornith.* 1894, p. 380; *Reichenow, Vög. Afr.* i, p. 118 (1900).

Querquedula erythroryncha, *Smith, Cat. S. A. Mus.* p. 36 (1837); *Holub & Pelzeln, Orn. Süd-Afr.* p. 330 (1882).

Pœcilonetta erythroryncha, *Smith, Illustr. Zool. S. Afr. Aves*, pl. 104 (1845); *Gurney, Ibis*, 1859, p. 251, 1861, p. 134, 1862, p. 158, 1868, p. 471 [Natal and Transvaal]; *id. in Andersson's B. Damaral.* p. 339 (1872); *Ayres, Ibis*, 1880, p. 272; *Oates, Matabeleland*, p. 328 (1881); *Butler, Feilden & Reid, Zool.* 1882, p. 427; *Sharpe, ed. Layard's B. S. Afr.* p. 754 (1884); *Nicolls and Eglington, Sportsm. S. A.* p. 126, pl. xii, fig. 62 (1892); *Salvadori, Cat. B. M.* xxvii, p. 285 (1895); *Shelley, B. Afr.* i, p. 172 (1896); *Woodward Bros., Natal B.* p. 211 (1899); *Marshall, Ibis*, 1900, p. 269; *Alexander, Ibis*, 1900, p. 443; *Oates, Cat. B. Eggs*, ii, p. 174 (1902); *Whitehead, Ibis*, 1903, p. 238.

"Smeē Eendje" of the Dutch; the word Smeē is sometimes used in East Anglia for the Widgeon; "Semto Letata" of Basutos (Murray).

Description. Adult male.—Crown and nape dark brown, separated from the white cheeks and throat by a very distinct line of demarcation running below the eye; neck mottled brown and dirty white; rest of the upper surface brown, all the feathers distinctly edged with a pale salmony pink; wings brown like the back, the inner secondaries salmony pink on the outer web, forming a speculum, their bases black and the tips of their coverts pink, thus forming two bands along the upper side of the speculum; below white, most of the feathers, especially those of the breast, flanks and under tail-coverts with subterminal semicircular spots of ashy-black; under wing-coverts ashy-black, some of the inner ones and the axillaries banded black and white.

Iris hazel; bill pink with a brownish stripe down the centre; legs dirty grey.

Length (in flesh) 19; wing 8·5; tail 3·0; culmen 1·55; tarsus 1·35.

The female resembles the male in plumage and dimensions.

Distribution.—The Red-bill has a very similar range to the Hottentot Teal, being spread over South and East Africa from Abyssinia to Cape Colony, up to South Angola on the west; it is also found in Madagascar.

It is, after the Yellow-bill perhaps, the commonest of all the South African Ducks, being met with almost everywhere, and being apparently a resident in most parts of our area.

The following are localities: Cape Colony—Cape division (S. A. Mus. and Novara Expedition), Port Elizabeth, common (Brown), Grahamstown (Brit. Mus.), King Williams Town, after rain (Trevelyan), Zak River in Fraserburg, September, Kuruman, July (Burchell), Orange River, near Upington, January (Bradshaw), near Aliwal North (Whitehead), Woodhouse Kraal, Mafeking division (Bryden); Natal—Conzella, near Durban (Gordge), near Maritzburg (Fitzsimmons), Newcastle district (Butler); Orange River Colony—Vrededorf Road, February (B. Hamilton), Basutoland, very common (Murray); Transvaal—Limpopo River (Holub), Potchefstroom, June, March (Ayres), Boksburg and Krugersdorp (Gilligan); Bechuanaland—Nocana, July (Fleck), Botletli River (Bryden); Rhodesia—Upper Zambesi (Holub), Ramaqueban River, March, November (Oates), near Salisbury common (Marshall); German South-west Africa, common throughout (Andersson and Fleck); Zumbo on the Zambesi, November (Alexander).

Habits.—The Red-bill haunts vleis and pans, and also the

stagnant lagoons lying alongside so many African rivers, but is seldom met with on the rivers themselves. It is generally seen in small flocks of from eight to ten individuals, and is by no means uncommon ; most observers state that it is not a very shy bird, and add that it is excellent eating.

It usually makes its nest among the thick rushes on the border of a vlei ; sometimes the nest is actually floating in the water ; it is constructed of sedge and usually lined with down and fine feathers ; the eggs are from eight to ten in number and are described by Fitzsimmons as of a light greenish-white colour ; examples preserved in the South African Museum and obtained some years ago by Mr. Jackson are creamy-brown and glossy ; they are fairly oval in shape and measure 2·0 × 1·55. Andersson found eggs in February and March at Ondonga, Fitzsimmons near Maritzburg ; it probably breeds throughout the country.

Examples of this species have been imported into Europe and have bred in the Zoological Gardens in London.

Genus X. SPATULA.

Type.

Spatula, Boie, *Isis*, 1822, p. 564 *S. clypeata*.

Bill very large and spatulate ; far exceeding the length of the head ; width of the upper mandible towards the tip nearly twice that at the base ; culmen nearly straight and flat ; nail narrow and small ; lamellæ along the edge of the upper mandible closely set and elongated ; wings long and pointed, the first and second primaries longest and subequal ; upper wing-coverts pale blue ; tail of 14 feathers, which are somewhat narrow and pointed, especially the central pair, which project somewhat ; tarsus short, about equal to the inner toe and shorter than the other two, with a row of scutes in front ; hind toe small, with a very narrow lobe.

This genus is cosmopolitan in range and includes four species ; two of which, one a resident, the other a very rare migrant from the north, are found in South Africa.

Key of the Species.

- A. Head and neck glossy green..... *S. clypeata*, ♂ p. 144.
- B. Head and neck fulvous, thickly spotted with brown. —

- a. Tail-feathers white and fulvous with brown centres *S. clypeata*, ♀ p. 144
- b. Tail-feathers dark brown with slightly paler edges only *S. capensis*, p. 145.

624. **Spatula clypeata.** *European Shoveller.*

Anas clypeata, Linn. *Syst. Nat.* i, p. 200 (1766).

Spatula clypeata, Dresser, *B. Eur.* vi, p. 497, pl. 425 (1873); Fairbridge, *Ibis*, 1893, p. 153; *Salvadori*, *Cat. B. M.* xxvii, p. 306 (1895); Reichenow, *Vög. Afr.* i, p. 110 (1900).

Description. Adult Male.—Head and upper part of the neck dark glossy green; lower neck, outer scapulars, breast and sides of the tail pure white; mantle and middle of the back dark brown with paler edges to the feathers; rump and upper tail-coverts black, glossed with green; tail-feathers white, freckled with brown, the centre ones almost entirely brown; primaries, primary coverts, tips of the secondaries and inner webs of the scapulars brown, the lesser and median coverts and the inner web of the outer scapulars pale blue; a median line of white divides the blue from the brown on the scapulars, the last row of coverts tipped with white forming a band along the front of the glossy metallic green speculum formed by the outer web of the outer secondaries; below the lower breast and abdomen is rich chestnut somewhat freckled with black on the latter, the under tail-coverts are black glossed with green.

Iris orange-red; bill lead colour; feet reddish-orange. Length 21·5; wing 10·0; tail 3·25; culmen 3·0; tarsus 1·3.

The female is brown above, each feather with a pale reddish border, the feathers of the back and rump, the scapulars and upper tail-coverts with concentric buff or rufous bands; wing-coverts grey to greyish-brown, speculum duller than in the male, lower parts brownish-buff, more rufous on the abdomen, speckled with dark brown on the fore neck; crescentic brown bars on the breast and flanks less strongly marked on the lower abdomen and tail-coverts, tail fulvous and white with brown centres to the feathers. Iris brown; bill and upper mandible dark brown, lower mandible dull orange; wing 8.75. Young males are like the female; the male assumes the female plumage except so far as the wings are concerned after the breeding season.

Distribution—The Shoveller is a bird of the Northern Hemisphere breeding throughout Europe, Northern Asia and North

America as far south as 68° N. Lat. It migrates southward in the northern winter to Africa, southern Asia and central and northern South America, including the West Indies.

In Africa it is a regular visitor as far as Abyssinia, south of which it has only once been procured, so far as I am aware. In the *Ibis* for 1893 Mr. W. G. Fairbridge states that a single male was brought to him in the flesh by Mr. J. C. Gie, which had been shot by his herd on September 14, 1893, at Riet Vlei, about eight miles from Cape Town. This specimen, which is a male in nearly full breeding plumage, is now preserved in the South African Museum. Mr. Fairbridge adds that a few days previously he had himself seen a Duck with a white breast which he forbore to shoot at, thinking it was a domesticated bird. On its rising, however, he perceived his mistake, and fired at it, but without effect.

625. *Spatula capensis*. *Cape Shoveller*.

Rhynchospis capensis, Smith, *Cat. S. A. Mus.* p. 86 (1837); *id. Illustr. Zool. S. Afr.*, *Aves*, pl. 98 (1844); Layard, *B. S. Afr.* p. 354 (1867);

Gurney, *Ibis*, 1868, p. 50 [Natal and Transvaal]; Layard, *Ibis*, 1869, p. 377; Bryden, *Gun and Camera*, p. 407 (1893).

Spatula capensis, Gurney in Andersson's *B. Damaral.* p. 341 (1872);

Butler, *Feilden and Reid, Zool.* 1882, p. 428; Sharpe, ed. Layard's *B. S. Afr.* p. 759 (1884); Nicolls and Eglington, *Sportsm. S. A.* p. 128, pl. xii, fig. 66 (1892); Salvadori, *Cat. B. M.* xxvii, p. 318 (1895); Shelley, *B. Afr.* i, p. 178 (1896); Reichenow, *Vög. Afr.* i, p. 111 (1900); Oates, *Cat. B. Eggs*, ii, p. 178 (1902).

"Slop" of Colonists.

Description. Adult Male.—Crown of the head dark brown speckled with fulvous, sides of the head and neck pale fulvous slightly spotted with black; breast, mantle, upper scapulars and back, dark brown with U or V shaped bars of fulvous; lower back, upper tail-coverts and tail black, outer tail-feathers with paler edges; primaries and their coverts blackish; median and lesser coverts to the edge of the wing and innermost scapulars pale blue, tips of one or two of the outermost secondary coverts white, forming a patch above the speculum, which is metallic green, inner secondaries a bluish green, darker than the speculum; below fulvous brown with darker brown spots and bars giving a mottled appearance; under tail coverts darker.

Iris lemon yellow; bill deep reddish-brown to black; legs ochraceous yellow, webs a little darker at the edges. Length 20·5; wing 10·15; tail 3·5; culmen 2·4; tarsus 1·4.

The female resembles that of *S. clypeata* but has the tail very dark brown with irregular rufescent bars.

Distribution.—The Cape Shoveller is apparently confined to South Africa, extending to Angola in the west. Lefebre stated that he met with this species many years ago in Abyssinia, but it has not been since procured there nor has it been observed in the intervening countries.

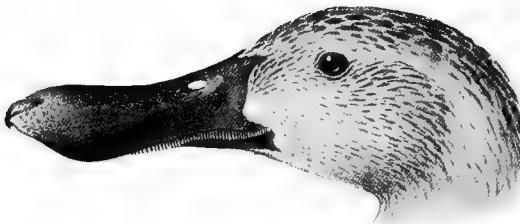


FIG. 42.—Head of *Spatula cayensis*. $\times \frac{1}{2}$

In South Africa this Duck is by no means common. It has not been found in Rhodesia or on the Zambesi, and it is rare in the Transvaal and in German Territory. The following are recorded localities:—Cape Colony—Cape division, July (S. A. Mus.), November (Layard), Verloren vlei in Piquetberg, Berg River, Vogel vlei in Paarl, Knysna (Layard), Port Elizabeth (Rickard), Queenstown (Griffith apud Layard); Natal—Durban (Ayres in Bt. Mus.), Newcastle, September (Butler); near Mafeteng in Basutoland (Murray); Transvaal (Ayres); Bechuanaland—Botletli River (Bryden); German South-west Africa—rare, but extending north to Okavango (Andersson).

Habits.—No one has made any observations worth recording on the habits of this bird. Layard received eggs taken by Mr. Kotze on the Berg River, which he described as a delicate cream colour tinged with green and measuring $2\cdot16 \times 1\cdot5$. These are probably the same as those described in the British Museum Catalogue.

Genus XI. NYROCA.

Type.

Nyroca, Flem. Phil. Zool. ii, p. 260 (1822)..... N. africana.

Bill about as long as the head, rather broad but the same width throughout its length, culmen slightly concave; lamellæ along the margin of the mandibles not projecting or conspicuous; nail broad

but not pointed; wings rounded, the first and second primaries, which are the longest, hardly exceeding the longest secondaries; no speculum; tail of fourteen feathers short and graduated; the feathers normal and rounded at the tips; tarsus very short, less than the inner toe; hind toe well developed and with a broad lobe posteriorly. This Genus contains some eight species of Diving Ducks commonly known as Pochards, distributed all over the world. Only one species is found within our limits, though two, the common Pochard (*N. ferina*) and the White-eye (*N. africana*), both northern species, range as far south as Abyssinia in winter.

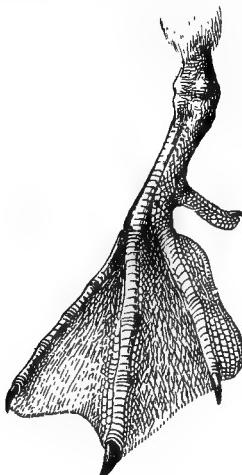


FIG. 43.—Left foot of *Nyroca erythrophthalma*. $\times \frac{1}{4}$

626. ***Nyroca erythrophthalma*.** *South African Pochard.*

Anas capensis (nec *Gmel.*) *Lesson*, *Tr. d'Orn.* p. 632 (1831).

Anas erythrophthalma, *Wied, Beitr.* iv, p. 929 (1832).

Fuligula capensis, *Smith, Cat. S. A. Mus.* p. 36 (1887); *P. L. Sclater, P. Z. S.* 1880, p. 526.

Nyroca brunnea, *Eyton, Mon. Anat.* p. 161, pl. 23 (1838); *Strickland and Sclater, Contrib. Ornith.* 1852, p. 160; *Layard, B. S. Afr.* p. 355 (1867); *Ayres, Ibis*, 1871, p. 266; *Bryden, Gun and Camera*, p. 404 (1893); *id. Nat. and Sport*, p. 48 (1897); *Salvadori, Cat. B. M.* xxvii, p. 351 (1895); *Shelley, B. Afr.* i, p. 173 (1896).

Fuligula brunnea, *Gurney, Ibis*, 1864, p. 355 [Natal].

Aythya capensis, *Gurney, in Andersson's B. Damara*, p. 342 (1872); *Butler, Feilden and Reid, Zool.* 1882, p. 428; *Sharpe, ed. Layard's B. S. Afr.* p. 760 (1884); *Nicolls and Eglinton, Sports. S. A.* p. 129 (1892).

Nyroca erythrophthalma, *Salvadori*, *Ibis*, 1896, p. 99; *Woodward Bros.* *Natal B.* p. 211 (1899).

Nyroca capensis, *Reichenow*, *Vög. Afr. i*, p. 108 (1900).

Aythya erythrophthalma, *Oates*, *Cat. B. Eggs ii*, p. 181 (1902); *Sharpe*, *Ibis*, 1904, p. 18 [Deelfontein].

Description. *Adult male.*—General colour a rich dark brown, almost black on the head and nape; the centre of the back, scapulars and upper wing-coverts very finely mottled with whitish; wings like the back, but the bases of the primaries and of the secondaries white, the latter forming a speculum bounded posteriorly by the brown tips, which form a band in the closed wing; sides of the head and neck a rich chestnut brown; a small but distinct triangular spot of white on the chin between the rami of the lower jaw, rest of the lower surface dark brown, becoming nearly black on the lower neck and chest, and more fulvous on the abdomen.

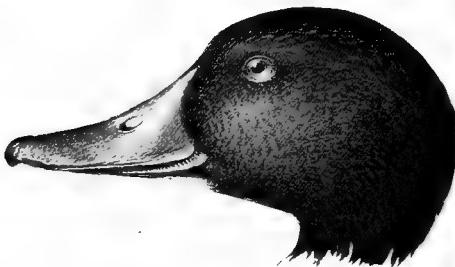


FIG. 44.—Head of *Nyroca erythrophthalma*, ♂. $\times \frac{1}{2}$

Iris orange yellow to red; bill leaden blue with black tip; legs blackish.

Length 20·0; wing 8·75; tail 2·0; tarsus 1·25; culmen 1·75.

The female is a good deal lighter in colour and has no freckling, the sides of the head, neck and throat white, except for a round patch below the eye, which is brown; the rest of the lower surface from the chest to the under tail-coverts is mottled white and fulvous brown, the fulvous more or less in narrow transverse bands.

Iris brown, bill leaden, feet black; size about the same; wing 8·5.

Distribution.—This Pochard is found throughout East and South Africa from Abyssinia and Shoa to Cape Colony and extending north

on the west to Angola; furthermore, if (as is here accepted) Salvadori's recent identifications are proved to be correct, in South America, in Southern Brazil and Peru.

In South Africa, this Duck, though never very abundant, is found throughout the greater portion of the country, even on the Karoo, where conditions hardly seem favourable. It appears to be generally met with in summer from September to December, and is probably a breeding migrant.

The following are localities: Cape Colony—Berg River, breeding September, Zoetendals Vlei in Bredasdorp, November (Layard), Cape division, September, Knysna, November (S. A. Mus.), Port Elizabeth, very rare (Brown), Kleinmont River in Bathurst (Atherstone), Deelfontein in Richmond division, September, rare (Seimund), Woodhouse Kraal in Mafeking division (Bryden); Natal—Sea Cow Lake near Durban, November (Ayres), near Howick (Burges), Newcastle, September to October, breeding (Butler); Orange River Colony—Rhenoster River, May (Ayres in Bt. Mus.), near Mafeteng in Basutoland (Murray); Transvaal—Marico (Barratt), near Potchefstroom (Ayres); Bechuanaland—Ngami (Nicolls), Botletli (Bryden); Rhodesia—Upper Zambesi (Bradshaw in Bt. Mus.), Feira, north-east Rhodesia (Stoehr); German South-west Africa—near Barmen, Ondonga, common, breeding February (Andersson); Portuguese East Africa—Inhamban, December (Francis in S. A. Mus.).

Habits.—All the Pochards are essentially divers, obtaining their food by diving entirely beneath the water, and not as the true Ducks do, merely searching in shallow water with the posterior half of the body vertically projecting. There is little to say about this species. It is generally found about the larger rivers and near the sea, though sometimes met with far inland. It is wary and wild, and has a more rapid flight than some of the other Ducks; it dives well.

It was found nesting on the Berg River in September by Mr. Layard, who states that the eggs were from five to eight in number. Three of these are still preserved in the South African Museum; they are broad, almost regular ovals, smooth and moderately glossy, of a pale creamy white colour, and measure $2\cdot3 \times 1\cdot65$.

Eggs obtained by Andersson at Ondonga in February are preserved in the British Museum; judging by the description given they are rather smaller and darker in colour than those I have examined.

Genus XII. THALASSORNIS.

*Type.***Thalassornis**, *Eyton, Mon. Anat.* p. 70 (1838).....*T. leuconota*.

Bill short and stumpy, its depth at the base more than half its length; the sides about parallel; culmen nearly straight; nostrils small and rounded; nail very large, vertically down-turned and pointed; a nuchal crest; wings short and rounded, the first three primaries curiously attenuated for their distal third; tail of 12 feathers, short, about a quarter the length of the wing but projecting well beyond the coverts; the feathers narrow and stiff; tarsus very short, about half the length of the middle toe; hind toe with a very broad lobe.

Only the single species here described, confined to South and East Africa, is referred to this genus.

627. **Thalassornis leuconota.** *White-backed Duck.*

Clangula leuconotus, *Smith, Cat. S. A. Mus.* p. 37 (1837); *id. Illustr. Zool. S. Afr. Aves*, pl. 107 (1846).

Thalassornis leuconotus, *Eyton, Monogr. Anat.* p. 168 (1838); *Gurney, Ibis*, 1861, p. 134, 1862, p. 39 [Natal]; *Pelzeln, Novara Reise, Vögel*, p. 139 (1865); *Layard, B. S. Afr.* p. 356 (1867); *Gurney in Andersson's B. Damara*. p. 343 (1872); *Ayres, Ibis*, 1874, p. 105; *Butler, Feilden and Reid, Zool.* 1882, p. 428; *Sharpe, ed. Layard's B. S. Afr.* p. 761 (1884); *Symonds, Ibis*, 1887, p. 336; *Nicolls and Eglington, Sportsm. S. A.* p. 124, pl. xii, fig. 68 (1892); *Bryden, Gun and Camera*, p. 407 (1893); *Fleck, Journ. Ornith.* 1894, p. 381; *Salvadori, Cat. B. M.* xxvii, p. 436 (1895); *Shelley, B. Afr.* i, p. 173 (1896); *Woodward Bros. Natal B.* p. 212 (1899); *Reichenow, Vög. Afr.* i, p. 106 (1900); *Hellmayr, Journ. Ornith.* 1902, p. 236 [Pienaar River]; *Haagner, Ibis*, 1902, pp. 575, 581; *Oates, Cat. B. Eggs*, ii, p. 192 (1902).

Description.—*Adult.*—Crown of the head, nape, sides of the face and throat black, the black mingled with ochraceous yellow on the sides of the face and neck; a spot at the base of the upper mandible and gape on either side whitish; sides and front of the lower neck rich fulvous yellow; general colour above and below fulvous and black, mottled and barred, palest in the middle of the breast where the bars are almost absent; centre of the back pure white, upper tail-coverts black tipped with white; tail-feathers stiff, narrow and projecting, brown edged with fulvous; primaries plain dark brown, no speculum. Iris dark brown; bill blue and slate; lower mandible yellowish; feet dark brown.

Length 17·0; wing 7·75; tail 2·0; tarsus 1·25; culmen 1·75. The sexes are alike; young birds are less ochraceous and more brown on the abdomen.

Distribution.—The White-backed Duck is confined to Africa and Madagascar. It ranges from Abyssinia on the east and from Loango on the west, southwards through East Africa and Nyasaland to Cape Colony.

Within our limits it is widely spread where suitable conditions exist but it has not yet been met with in Rhodesia or on the Zambesi, though probably to be found there. The following are localities :—Cape Colony—Verloren Vlei in Piquetberg, (Smith, type), Cape division (S. A. Mus.), Simonstown (Novara), Port

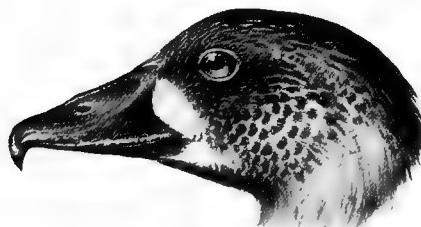


FIG. 45.—Head of *Thalassornis leuconota*. $\times \frac{1}{2}$

Elizabeth, rare (Brown), Vaalpens Pan near Mafeking (Nicolls and Eglington); Natal—Clairmont near Durban, breeding November to February (Millar), Newcastle district, September to October, breeding (Butler and Feilden); Orange River Colony—Kroonstad, March (Symonds); Transvaal—Potchefstroom rare (Ayres), Pienaar's River Bridge in Pretoria district, April (Penthal), Modderfontein, breeding, April (Haagner); Bechuanaland—Tebra county, February (S. A. Mus.), Nocana, July (Fleck), Botletli River (Bryden); German South-west Africa—generally scarce, but common at Oman-bonde and Ondonga (Andersson).

Habits.—This Duck is found on lagoons and about the mouths of rivers and also inland on the larger pans and rivers, as a rule singly or in pairs. It seldom flies, but nearly always dives into shelter when disturbed. Most observers say that it has almost lost the power of flight and is only able to skim along the surface of the water, but Ayres states that it rises easily and flies well. The flesh is very oily and unpalatable.

Mr. A. D. Millar writes to me that he has visited several nests in a vlei at Clairmont close to Durban. The first, found on November 24, 1901, contained two fresh eggs; it was composed of rushes and was floating in about three feet of water, while above the nest the rushes were arched over for concealment. Others found on December 14, 1901 and February 16, 1902, contained four, three and five eggs. Butler found the nest of this Duck under very similar circumstances in the Newcastle district of Natal in September.

The eggs found by Mr. Millar, two of which he has presented to the South African Museum, are perfectly smooth and glossy and of a warm brown colour throughout; they are nearly regular ovals and measure $2\cdot7 \times 1\cdot9$ and $2\cdot6 \times 1\cdot95$ respectively. On the other hand, those obtained by Butler, now in the British Museum, are described as being rough, granulated, with little gloss and of a pale greenish white colour. They measure $2\cdot6 \times 2\cdot0$ and $2\cdot55 \times 2\cdot0$ respectively.

Mr. Millar tells me that though he did not actually see the Ducks sitting on the eggs, the birds, which he knows well, were in the immediate vicinity, and that he found their feathers in the nests themselves and that he is quite satisfied as to the identification. Possibly Butler's eggs were those of the Maccoa Duck.

Genus XIII. ERISMATURA.

Type.

- Erismatura**, *Bp., Sagg. Distr. Met. An.* p. 143
 (1832) *E. jamaicensis*.

Bill similar to that of *Thalassornis* but the culmen slightly concave and the nail bent downwards and inwards, forming an acute angle with the line of the culmen; lamellæ along the edge of the upper mandible coarse and somewhat visible; no nuchal crest; wings short and rounded, not reaching the base of the tail, the primaries hardly exceeding the secondaries in length; tail of 18 feathers which are narrow, stiff, graduated and very long, being about half the length of the wing; tarsus and foot as in *Thalassornis*.

Salvadori in the British Museum Catalogue includes seven species in this genus; they are generally distributed over the greater part of the Old and New Worlds. Only the single African species is found within our limits.

628. **Erismatura maccoa.** *Maccoa Duck.*

Oxyura maccoa, Smith, Cat. S. A. Mus. p. 37 (1837); *id. Ill. Zool. S. Afr. Aves*, pls. 108, 109 (1847).

Erismatura maccoa, Eyton, Monogr. Anat. p. 169 (1838); Layard, B. S. Afr. p. 356 (1867); Ayres, *Ibis*, 1869, p. 302; Sharpe, ed. Layard's B. S. Afr. p. 762 (1884); Nicolls and Eglington, *Sportsm. S. A.* p. 125, pl. xii, fig. 67 (1892); Salvadori, Cat. B. M. xxvii, p. 448 (1895); Shetley, B. Afr. i, p. 174 (1896); Reichenow, *Vög. Afr.* i, p. 105 (1900); Sharpe, *Ibis*, 1904, p. 18 [Deelfontein].

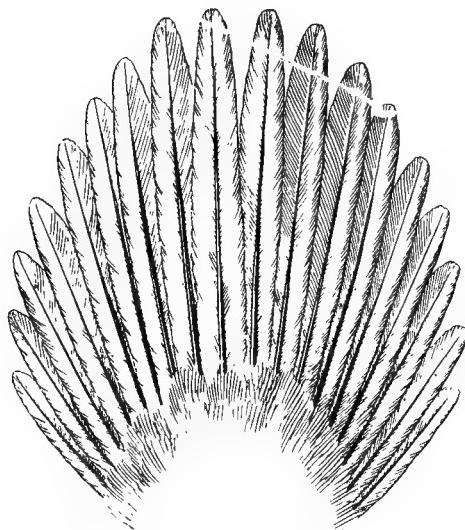


FIG. 46.—Tail of *Erismatura maccoa.* $\times \frac{3}{4}$

Description. *Adult Male.*—Head and the upper part of the neck black, lower neck, breast and most of the upper surface rich chestnut; wings except the least coverts, centre of the lower back and tail (which is very long) very dark brown, centre of the lower breast and abdomen shading from chestnut to silvery-grey slightly mottled with black, the feathers having dark bases; under wing coverts white with dark grey centres, axillaries pure white.

Iris dark hazel; bill blue black; feet dark leaden blue. Length 18·5; wing 7·0; tail 3·25; culmen 1·5; tarsus 1·25.

The female has the upper parts, including the crown and nape brown, minutely freckled with pale fulvous and grey, the primaries

and tail feathers brown and unfreckled ; an indistinct white stripe from the base of the upper mandible below the eye almost to the nape, chin and throat also white ; below silvery grey mottled and barred with brown, darkest on the breast.

A young bird has the head and neck slightly freckled with white and on the lower neck and upper parts the feathers are mostly brown and freckled, the pure chestnut gradually taking their places.

Distribution.—The Maccoa is certainly the rarest of the South African Ducks. Smith, who first discovered it, obtained his specimens at Verloren Vlei, in the Piquetberg division, and at the mouth of the Orange River ; it is occasionally met with on the Cape Flats near Cape Town. Mr. Layard mentions that it was particularly abundant there, together with the South African Pochard, in 1858 ;

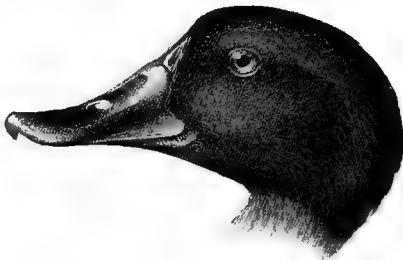


FIG. 47. — Head of *Erismatura maccoa*. $\times \frac{1}{2}$

he further states that Mr. Dumbleton shot an example at Victoria West, not very far from Deelfontein, where it has been recently procured by Colonel Sloggett's collectors, Messrs. Seimund and Grant. Outside Cape Colony Ayres shot an example on the Vaal River near Potchefstroom in December, and there is another now in the South African Museum, a young female, obtained by Mr. Eriksson in the Tebra Country west of Lake Ngami in April, while Mr. Murray tells me he has shot a good many near Mafeteng in Basutoland. It has not yet been met with in Natal, Rhodesia or German South-west Africa.

North of the Zambesi it reappears at Lake Naivascha, in British East Africa, and in Shoa in Southern Abyssinia.

Habits.—Smith describes the Maccoa as an exceedingly shy bird, seldom venturing out of the shelter of the reeds and rushes when danger threatens. It swims very low in the water, only the top of its back showing ; it seldom or never takes to flight, but dives

with great facility for a long time and for a very considerable distance.

The example obtained by Ayres was shot in a lagoon alongside the Vaal River; it was constantly diving and did not attempt to fly; the stomach contained water snails.

Nothing is known of its eggs or nidification but I suspect that the eggs ascribed by Butler to the White-backed Duck were really those of this species, as they agree very closely with those of other members of the genus *Erismatura*.

Order X. COLUMBÆ.

The Pigeons form a well marked group, with no clearly well-defined relationships, except perhaps to the Sandgrouse (*Pterocletes*).

They are birds of moderate size, with short legs and toes without a trace of a web; the bill is very characteristic, the distal portion being slightly swollen and hard, and the proximal portion, in which the nostrils open, covered by a soft skin, forming what is called the cere; there are eleven primaries; the number of tail feathers varies from twelve to twenty; the hallux, which is always present, is jointed on a level with the other toes.

The young, when hatched, are naked and helpless, and are entirely dependent on their parents for a considerable time.

Anatomical characters are:—Skull schizognathous and schizorhinal; basipterygoid processes present; angle of the mandible not produced behind its articulation with the quadrate; no aftershaft to the feathers; a well developed crop; oil gland, if present, naked; deep plantar tendons galline (see Vol. III., p. 2, fig. 2b); cæca rudimentary when present; two carotids; ambiens muscle present or absent, the other four Garrodian muscles almost always present.

The distinctions between the families and subfamilies of this Order, as usually recognised, are not of very fundamental importance. Only two families are here recognised, one containing the so-called Green-Pigeons, the other the rest of the South African representatives of this Order.

Key of the Genera.

- A. Fourteen tail-feathers; plumage green and yellow *Vinago*, p. 156.
- B. Twelve tail-feathers; plumage never green and yellow,

- a. Tarsus shorter than the middle toe (without claw).
 - a¹. No metallic sheen on the hind neck, sexes alike *Columba*, p. 160.
 - b¹. Metallic sheen on the hind neck; sexes dissimilar *Turturæna*, p. 164.
- b. Tarsus equal to or longer than the middle toe without claw.
 - a¹. No metallic sheen on the back; no metallic spots on the wings..... *Turtur*, p. 166.
 - b¹. Metallic spots on the wings and scapulars.
 - a². Tail long and much graduated, the outer feathers less than half the middle ones... *Æna*, p. 174.
 - b². Tail normal, shorter than the wing and slightly rounded.
 - a³. First primary attenuated at the tip..... *Tympانistria*, p. 177.
 - b³. First primary normal *Chalcopelia*, p. 180.
 - c¹. No metallic spots, but the hind neck and breast suffused with a metallic sheen..... *Haploelia*, p. 182.

Family I. TRERONIDÆ.

Usually fourteen tail feathers; general plumage green; no ambiens muscle, oil gland or cæca.

Genus I. VINAGO.

Type.

Vinago, Cuvier, *Règne Anim.* i, p. 457 (1817) V. waalia.

Bill somewhat stout and slightly hooked, soft basal portion occupying about half its length; wings pointed, the first and third primaries only slightly falling short of the second, which is the longest; the third quill distinctly scooped out on the inner web; tail of fourteen even feathers; tarsus shorter than the middle toe and claw, feathered almost to the toe joints with yellow plumes; soles of all the toes broad and widened out below; plumage chiefly green.

This, the only African genus of Green Pigeons, contains some eight species all confined to that Continent; two, showing but superficial points of difference, are found in South Africa.

Key of the Species.

- A. Below greenish with an olive tinge *V. delalandii*, p. 157.
 B. Below greenish with a yellowish tinge *V. schalowi*, p. 159.

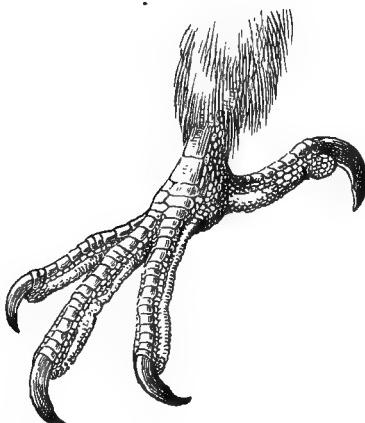


FIG. 48.—Left foot of *Vinago delalandii*. $\times \frac{1}{2}$

629. ***Vinago de'alandii.* Delalande's Green Pigeon.**

Phalacrotreron delalandii, *Bp. Conspl. Av.* ii, p. 6 (1854); *id. Icon Pig.* pl. 1 (1857); *Ayres, Ibis*, 1880, p. 109.

Treron delalandii, *Gurney, Ibis*, 1862, p. 33; *Layard, B. S. Afr.* p. 255 (1867); *Gurney, Ibis*, 1868, p. 164; *Shelley, Ibis*, 1875, p. 88; *Holub & Pelzeln, Orn. Süd-Afr.* p. 171 (1882); *Shelley, Ibis*, 1882, p. 258 [Umfuli River], 1883, p. 270; *Sharpe, ed. Layard's B. S. Afr.* p. 558 (1884); *Ayres, Ibis*, 1885, p. 345; *Rendall, Ibis*, 1896, p. 174; *Woodward Bros. Ibis*, 1898, p. 217.

Vinago delalandei, *Salvadori, Cat. B. M.* xxi, p. 24 (1893); *Shelley, B. Afr.* i, p. 134 (1896); *Sowerby, Ibis*, 1898, p. 575; *Woodward Bros., Natal B.* p. 128 (1899); *Marshall, Ibis*, 1900, p. 261; *Reichenow, Vög. Afr. i*, p. 397 (1901); *Shortridge, Ibis*, 1904, p. 200.

"Ijabantoto" of Natal Zulus.

Description. *Adult.*—Head, neck and sides of the face olive green; below the hind neck a broad collar of mauve-grey; mantle, wings and tail bright grass-green, the wing-coverts and angle of the wing washed with vinaceous-pink; wing-quills and most of the larger coverts black, narrowly edged with pale yellow; lateral tail feathers with the apical third distinctly paler green; below ashy olive-green mottled with bright yellow on the abdomen, the flank

feathers edged with white ; tarsal plumes bright yellow ; under tail-coverts rufous-brown tipped and edged with white ; tail-feathers black below with the apical third white.

Iris pale blue to greyish or greenish-white ; bill light bluish-horn ; cere bright scarlet ; tarsus and feet bright orange to vermillion.

Length about 12·0 ; wing 6·5 ; tail 4·0 ; tarsus 1·0 ; culmen .90. The female resembles the male in plumage and dimensions. The young bird, according to Salvadori, has less vinaceous on the bend of the wing.

Distribution.—Delalande's Green Pigeon is spread over Eastern and South Eastern Africa, extending from the neighbourhood of Mombasa through German East Africa and Nyassaland to the extreme east of Cape Colony.

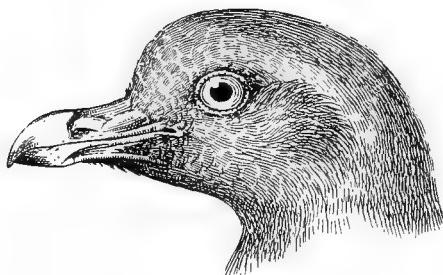


FIG. 49.—Head of *Vinago delalandii*. $\times \frac{11}{12}$

The following are the localities within our limits : Cape Colony—King William's Town and East London district, March and July (Trevelyan), Port St. John's, November (S. A. Mus.) ; Natal—Pinetown, June and August (Ayres in Brit. Mus.) ; Transvaal—near Barberton (Rendall), Rustenburg, June and August (Ayres), Magaliesberg, commoner in summer (Ayres) ; Rhodesia—Matopos, near Bulawayo (Tredgold), Umfuli River, August, September (Ayres), Chiquaqua (Sowerby), near Feira on the Zambesi (Stoehr) ; Portuguese East Africa—Inhambane (Peters), Shupanga on the Zambesi (Kirk).

Habits.—This Green Pigeon seems to be a partial migrant, making its appearance suddenly when the wild berries and fruits of certain trees, especially figs, on which it chiefly feeds, are ripening. It is usually seen in small flocks, though occasionally found solitary. Owing to the colour of its plumage and to its habit of

frequenting tall and thickly-leaved trees, it is difficult to observe ; moreover, it sits very close, only dashing out with rapid flight at the last moment. The Woodwards, however, found it very easy to shoot when feeding, and state that it is usually fat and very delicate eating. The note is a somewhat musical whistle, and is quite different to the cooing of other Pigeons.

Ayres found a nest of this species in the Magaliesbergen of the Transvaal towards the end of November, 1882 ; it was composed of the usual layer of sticks, and was not more than ten feet from the ground ; it contained a well fledged young bird and an addled white egg.

630. *Vinago shalowi*. *Shallow's Green Pigeon.*

Phalacrotreron calva, *Gurney* (*nec Temm.*) in *Andersson's B. Damara*.
p. 230 (1872).

Treron shalowi, *Reichenow*, *Orn. Centralb.* 1880, p. 108 [? *Kimberley*] ;
Fleck, *Journ. Ornith.* 1894, p. 388.

Treron wakefieldi (part), *Sharpe*, ed. *Layard's B. S. Afr.* p. 557 (1884).
Vinago shalowi, *Salvadori*, *Cat. B. M.* xxi, p. 24 (1893) ; *Shelley*, *B. Afr.* i, p. 134 (1896) ; *Reichenow*, *Vög. Afr.* i, p. 399 (1901).

Description. *Adult Female*.—Resembling *V. delalandii* in most respects, but the olive-green of the head, neck and under parts is replaced by a bright yellowish-green, which is brightest and most yellow on the abdomen.

Iris pale bluish ; bill greyish, bright red on the cere ; legs bright red.

Length about 11·0 ; wing 6·5 ; tail 3·25 ; tarsus .90 ; culmen .85.

Distribution.—The type of this species is said to have come from the neighbourhood of the Diamond Fields (*i.e.* Kimberley) ; other examples apparently identical have been recorded from Matabeleland (Oates), from Ondonga in the extreme north of German Southwest Africa, and from Nocana on the Okavango River. The description is drawn up from an example recently added to the South African Museum, obtained at Livingstone, on the Zambesi, just above the Victoria Falls, in September, 1904.

Family II. COLUMBIDÆ.

Usually 12 tail-feathers ; general colour of the plumage a shade of grey, not green ; *ambiens*, oil gland and caeca usually, but by no means invariably, present.

Genus. I. COLUMBA.

Type.

Columba, Linn. Syst. Nat. i, p. 279 (1766) *C. livia*.

Bill somewhat long and slender, the soft basal part swollen above the nostrils which are linear and horizontal ; wings pointed, the 1st primary always longer than the 6th ; tail of 12 feathers, of moderate length, usually about two thirds the length of the wing ; tarsus with the lower half at least, bare, shorter than the middle toe ; the soles of the toes (except that of the hind one) not so expanded as in the case of the previous genus.

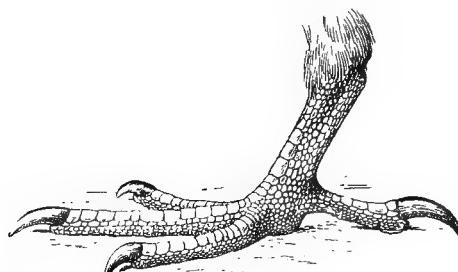


FIG. 50.—Left foot of *Columba phæonota*. $\times \frac{1}{2}$

The plumage is some shade of grey and some of the neck feathers are slightly acuminate.

This genus, containing the Rock Pigeons and their allies, is widely spread, being found throughout the World. Of some ten African species only two are found within our area.

Key of the Species.

- A. Larger, wing over 9 inches ; breast spotted with white ; bill yellow *C. arquatrix* p. 163.
- B. Smaller, wing under 9 inches ; breast unspotted ; bill black *C. phæonota* p. 160

631. *Columba phæonota*. Speckled Pigeon.

Columba guinea, Gmel. Syst. Nat. i, p. 774 (1788) [in part] ; Layard, B. S. Afr. p. 256 (1867) ; Barratt, Ibis, 1876, p. 208 ; Oakley, Trans. S. A. Phil. Soc. ii, p. 49 (1881) ; Fleck, Journ. Ornith. 1894, p. 388. Le Ramier Roussard, Levail, Ois. d'Afr. vi, p. 70, pl. 265 (1808). *Columba guineensis*, Burchell, Travels, i, p. 501, ii, p. 257 (1822-4).

- Columba phæonotus*, *G. R. Gray*, *List Bt. Mus. Columbae*, p. 32 (1856); *Buckley*, *Ibis*, 1874, p. 384; *Ayres*, *Ibis*, 1877, p. 345, 1880, p. 109; *Shelley*, *Ibis*, 1882, p. 259 [Dry Harts River]; *Butler*, *Feilden and Reid*, *Zool.* 1882, p. 387; *Shelley*, *Ibis*, 1888, p. 279; *Sharpe*, ed. *Layard's*, *B. S. Afr.* pp. 559, 854 (1884); *Salvadori*, *Cat. B. M.* xxi, p. 268 (1898); *Shelley*, *B. Afr.* i, p. 135 (1896); *Woodward*, *Eros. Ibis*, 1898, p. 217; *id. Natal B.* p. 129 (1899); *Reichenow*, *Vög. Afr.* i, p. 403 (1901); *Haagner*, *Ibis*, 1902, pp. 573, 579; *Whitehead*, *Ibis*, 1903, p. 233; *Sharpe*, *Ibis*, 1904, p. 6 [Deelfontein]; *Shortridge*, *Ibis*, 1904, p. 200.
- Columba trigonera*, *Gurney*, *Ibis*, 1860, p. 214, 1864, p. 359, 1868, p. 164.
- Stictocnemus phæonotus*, *Gurney*, in *Andersson's B. Damara*. p. 231 (1872); *Shelley*, *Ibis*, 1875, p. 83.
- "*Bosch-duif*" of the Dutch, "*Ivukutu*" of *Amaxosa* (Stanford); "*Leeba*" of *Basutos* (Murray).

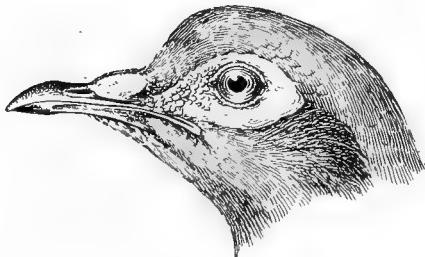


FIG. 51.—Head of *Columba phæonota*. $\times \frac{11}{12}$

Description. *Adult.*—Head and neck all round slaty-grey, all round the base of the neck a collar of pointed, somewhat outstanding feathers, chestnut brown with pinkish tips; mantle and most of the inner coverts of the wing maroon, rest of the wings slaty like the head, most of the coverts with small triangular spots of white at their apices, giving the wing a speckled appearance; rump, upper tail-coverts and tail slaty-grey like the head; the tail-feathers with a broad terminal bar of black and traces of a subterminal bar as well; below slaty-grey throughout except the collar and a wash of maroon just below it.

Iris yellowish-white, sometimes with an outer ring of yellowish-red; bill black to ashy-brown; cere whitish-horn; naked space round the eye and legs crimson.

Length (in flesh) 13·5; wing 8·5; tail 4·5; tarsus .95; culmen .80. The sexes are alike. A young bird is without the collar; the back is chestnut rather than maroon and the white spots on the wings are

tinged with maroon and not nearly so conspicuous : the subterminal black band on the tail is well marked. Iris dirty white passing to cream colour, bill and bare skin cinereous ; legs reddish-brown.

Distribution.—This species is confined to South Africa, being represented in East, Central and West Africa by the very closely allied *C. guinea*, which has a much paler grey or ashy-white rump. The Speckled Dove is found throughout the greater part of our area, though hitherto, so far as I am aware, it has not been noticed in Rhodesia.

The following are localities : Cape Colony—Cape division, nesting (Layard), Paarl (Shelley), Caledon, March, and Swellendam (S. A. Mus.), Deelfontein, resident (Seimund), Orange River near Aliwal North (Whitehead), Hay division (Burchell), Dry Harts River in Vryburg (Ayres), Port Elizabeth, nesting (Brown), East London (Rickard), Ibeka in Transkei (Oakley), Port St. John's, November (S. A. Mus.); Natal—Ifafa, breeding, and Upper Zululand (Woodward), Maritzburg (Ayres), Ingagane River (Butler); Orange River Colony—Vredefort Road (B. Hamilton) Ficksburg, breeding August (Sparrow), Basutoland, common (Murray); Transvaal—Rustenburg, Pretoria and Potchefstroom (Barratt and Ayres), Modderfontein, breeding, March (Haagner); German South-west Africa—Great Namaqualand and Damaraland (Andersson and Fleck).

Habits.—The Speckled Pigeon appears in very large numbers on plough lands when the crops are getting ripe, and does a vast amount of harm pulling the green corn and also eating the grain when ripe. They are wary birds, and very strong on the wing, but afford good sport and are usually fat and well tasting.

They roost as a rule on krantjes among the mountains, in the neighbourhood of which they are usually more abundant. The note closely resembles that of the domestic tame Pigeon, being a sonorous cooing; the cock also bows to its mate in the same fashion.

Layard found this bird breeding in large numbers in the caves along the shores of the Cape Peninsula; he states “ Some years ago we entered one of them in a boat and for the first time had the pleasure of seeing this fine Pigeon breeding in considerable numbers; every ledge of the cave inside was tenanted by as many nests as could conveniently be stowed away, while the parent birds were continually arriving or departing on their busy task of feeding their young.” Butler found nests on the ledges of the krantjes near the river Ingagane in Natal in July (midwinter) and also in October.

Oakley, while acknowledging that this Pigeon usually builds among the rocks, states that he found two nests in the hollows of a Kaffir boom (*Erythrina*) in the Transkei. The eggs are always two in number, glazy white, and nearly similar at both ends, measuring $1\cdot4 \times 1\cdot0$. There is a clutch of two eggs in the South African Museum taken by Major Sparrow near Fickburg in the Orange River Colony on August 1, 1901, and another from Mooi River in Natal, taken on March 8, 1904.

This bird is closely allied to the wild Rock Pigeon of Europe, from which all our domestic breeds are believed to have been derived.

632. *Columba arquatrix*. Olive Pigeon.

Le Rameron, *Levaill. Ois. d'Afr.* vi, p. 67, pl. 264 (1808).

Columba arquatrix, Temm. & Knip, *Pig.* i, fam. sec. p. 11, pl. 5 (1808-13); *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 51 (1858) [Knysna]; *Gurney, Ibis*, 1860, p. 213 [Durban]; *Layard, B. S. Afr.* p. 257 (1867); *id. Ibis*, 1869, p. 459; *Ayres, Ibis*, 1876, p. 433, 1880, p. 109, 1885, p. 345; *Salvadori, Cat. B. M.* xxi, p. 276 (1893); *Shelley, B. Afr.* i, p. 135 (1896); *Woodward Bros. Ibis*, 1898, p. 217; *id. Natal B.* p. 130 (1899); *Reichenow, Vög. Afr.* i, p. 403 (1901); *Whitehead, Ibis*, 1903, p. 234.

Palumbus arquatrix, *Shelley, Ibis*, 1883, p. 283; *Sharpe, ed. Layard's B. S. Afr.* p. 561 (1884).

"Rameroon Pigeon" of some authors; "Oliven duif," or, like the last species, "Bosch duif" of the Dutch; "Black Pigeon" of the Natal Colonists; "Izuba" of the Amaxosa (Stanford).

Description. Adult.—Front half of the crown and cheeks dark vinous purple; occiput and nape silvery-slate; hind neck with a series of somewhat pointed semi-erect vinous pink feathers with concealed black bases forming a collar; mantle and upper half of the wings dark vinous purple, becoming slaty and darker on the greater coverts and quills; a series of white rounded spots on the scapulars and lesser wing-coverts; rump dark slate shading into black on the tail coverts and feathers; chin and throat vinous pink, the lower feathers with darker bases forming an incomplete transverse band; breast darker, a vinous purple spotted with white; abdomen and under tail-coverts slate.

Iris yellow, bill, bare skin round the eye and legs yellow. Length about $15\cdot5$; wing $9\cdot25$; tail $6\cdot0$; culmen $\cdot9$; tarsus $1\cdot10$; weight 16-17 oz. (Ayres).

The female is slightly smaller and duller in colour; in the young

bird the head is mixed grey and purple, and the back is more or less brown.

Distribution.—The Olive Pigeon is a bird of the forest and is found only along the southern coast of the Colony from Knysna through the Eastern Province to Natal and Zululand; stragglers occasionally reach the neighbourhood of Cape Town and it is common in parts of the Transvaal, but has not yet been noticed in German South-west Africa or Rhodesia.

Beyond our limits it extends through Nyasaland and East Africa, to Shoa and Abyssinia, and has also been obtained in Angola.

The following are recorded localities: Cape Colony — Cape division, June (Layard and S. A. Mus.), George (Atmore), Knysna, November and December (le Vaillant, Victorin and Layard), East London (Rickard), Peri Forest near King William's Town (Trevelyan), Sunday River and Pondoland (Berlin Mus.), Orange River near Aliwal North (Whitehead); Natal—near Durban, June to August (Ayres), Pinetown, September (Brit. Mus.), Balgowan, breeding March (Sparrow); Zululand (Woodward); Transvaal-Lydenburg and the Magaliesberg in Rustenburg (Ayres).

Habits.—This, the largest of South African Pigeons, is chiefly an inhabitant of the forest; it seems to be partially migratory in its habits, appearing in very large numbers at certain seasons of the year, when the forest fruits are ripe, especially those of the wild olive tree; this is in November and December at Knysna, and in June, July and August near Durban. At other times of the year they appear to be dispersed about solitary or in pairs. They build the usual loose nest of sticks in trees, usually in mountain ravines, and lay two white eggs, measuring about $1\cdot5 \times 1\cdot12$. Atmore found nests in the top of tree ferns in the mountain ravines near Blanco in the George district, and Layard states that he was informed that they laid four eggs, only two of which hatched out. On the other hand, Major Sparrow tells me that, as a rule, only one egg is laid and hatched, and that this is somewhat rounded, and of a pale greenish tinge.

Genus II. TURTURÆNA.

Type.

Turturæna, *Bp. Comptes Rend.* xxxix. p. 1104 (1854) T. delagorguei.

This genus resembles *Columba* in most respects, but the size is smaller and there is a patch of metallic colour on the hind neck, while the sexes are dissimilar.

Some four species, all confined to Africa, have been described ; one, the type of the genus, is found in South Africa.

633. *Turturæna delagorguei*. *Delagorgue's Pigeon.*

Columba delagorguei, *Delagorgue*, *Voy. Afr. Austr.* ii, p. 615 (1847) ; *Gurney*, *Ibis*, 1864, p. 354 [Natal] ; *Layard*, *B. S. Afr.* p. 257 (1867). *Turturæna delagorguei*, *Shelley*, *Ibis*, 1883, p. 289 ; *Sharpe*, *ed. Layard's B. S. Afr.* p. 563 (1884) ; *Salvadori*, *Cat. B. M.* xxi, p. 328, pl. ix, figs. 1, 2, (1893) ; *Shelley*, *B. Afr.* i, p. 135 (1896) ; *Woodward Bros. Natal B.* p. 131 (1899) ; *Reichenow*, *Vög. Afr.* i, p. 417 (1901).

Description.—*Male*.—Head, cheeks, and nape dark slate with green and pink metallic reflections, which are most conspicuous on the nape ; between the nape and the mantle a crescent-shaped mark of white ; rest of the mantle and wing dark crimson, shading into slaty-black on the lower coverts, shoulders and quills ; rump, upper tail-coverts and tail also slaty, becoming almost black on the tail, except for a narrow apical band, which is again paler ; below slaty-grey throughout, the breast washed with pink gloss.

Iris dark brown, bill ashy, bare skin round eye, legs and feet dark pink.

Length 12·0 ; wing 6·75 ; tail 5·0 ; tarsus .90 ; culmen .65.

In the female the forehead is slaty-grey, the crown and nape rufous-red with pink and green metallic reflections, which extend on to the slaty upper part of the mantle ; the rest of the upper surface, including the wings and tail, dark slaty-black ; below grey, very finely freckled with a yellowish-brown throughout. Dimensions about the same as the male but a little smaller. Length 11·5 ; wing 6·75 ; tail 4·5.

Distribution.—This Pigeon was first discovered and described by M. Delagorgue, a French naturalist and sportsman, in the neighbourhood of Durban ; it has since been obtained by Ayres and Millar in the same neighbourhood, but it appears to be uncommon. The Woodwards obtained a single specimen, now in the South African Museum, in the Umgoye Forest in Zululand. No other South African locality is known. Two species, however, (*T. sharpei* and *T. harterti*), have recently been described from the neighbourhoods of Mount Elgon and Mount Kilimanjaro respectively, which seem to be very closely allied to the Natal bird.

Habits.—Practically nothing is known of the habits of this bird ;

Ayres, the only observer who has recorded anything, states that the stomach of one examined by him contained the frothy larvæ of a Cicada, and that in the season it also feeds on mulberries growing in the gardens along the Berea, in the neighbourhood of Durban.

Mr. Millar informs me that it is generally seen in pairs, though sometimes in small flights, and that it is very fond of what is known locally as the "white-eye" berry, but that he had failed to discover anything in regard to its nesting habits.

Genus III. TURTUR.

Type.

Turtur, *Selby, Nat. Libr. Pigeons*, p. 169 (1835)..... *T. risorius*.

Bill somewhat slender and delicate, the horny apex of the mandible a good deal shorter than the soft basal portion; wing long and pointed, the second or third quill the longest; tail long, more

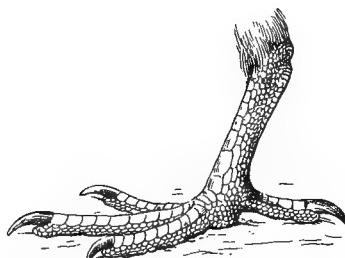


FIG. 52.—Left foot of *Turtur capicola*. $\times \frac{1}{2}$

than two-thirds the length of the wing, rounded or somewhat graduated; tail-feathers twelve in number; tarsus naked, equal to or longer than the middle toe without the claw, sole of the toes narrow, adapted for walking; no metallic spots or patches in the plumage, neck with a dark collar or scale-like patches on either side; sexes alike.

The true Doves form a large genus spread over the greater part of the Old World, except Australia; out of some thirteen African species four are found within our limits.

Key of the Species.

- A. With a black collar on the hind neck.
- a. Larger, wing over 7·0; outer tail-feathers with a terminal band of grey.
 - a².* Under tail-coverts grey *T. semitorquata*, p. 167.
 - b².* Under tail-coverts grey, margined with white *T. ambiguus*, p. 168.
 - b. Smaller, wing under 6·0; outer web of the outer tail-feathers with a broad terminal band of white.
 - a¹.* Forehead and breast darker..... *T. capicola*, p. 169.
 - b¹.* Forehead and breast paler, almost white *T. capicola damarensis*, p. 171.
- B. Black collar on the hind neck replaced by a series of bifid feathers with rufous tips and black bases on the sides and front of the neck. *T. senegalensis*, p. 172.

634. Turtur semitorquatus. Red-eyed Dove.

Columba semitorquata, *Rippell*, *Neue Wirbelth. Vög.* p. 66, pl. 23, fig. 2 (1835).

Turtur erythrophrys, *Swains.*, *B. W. Afr.* ii, p. 207, pl. 22 (1837) *Gurney*, *Ibis*, 1862, p. 152 [Natal].

Turtur vinaceus (*nec Gmel.*) *Layard*, *B. S. Afr.* p. 259 (1867).

Streptopelia semitorquata, *Gurney*, in *Andersson's B. Damara*. p. 234 (1872).

Turtur semitorquatus, *Shelley*, *Ibis*, 1882, p. 359 [Umfuli River] *Holub & Pelzeln*, *Orn. Süd-Afr.* p. 175 (1882); *Shelley*, *Ibis*, 1883, p. 303; *Sharpe*, ed. *Layard's B. S. Afr.* p. 566 (1884); *Salvadori*, *Cat. B. M.* xxi, p. 416 (1893); *Fleck*, *Journ. Ornith.* 1894, p. 389; *Shelley*, *B. Afr.* i, p. 136 (1896); *Woodward Bros. Natal B.* p. 131 (1899); *Marshall Ibis*, 1900, p. 261; *Alexander, Ibis*, 1900, p. 428; *Reichenow*, *Vög. Afr.* i, p. 409 (1901); *Shortridge, Ibis*, 1904, p. 201. "Ihobe" of the Zulus (Woodward).

Description. Adult Male.—Forehead and crown grey, shading into pale pink on the cheeks and nape; this is followed by a very distinct black half collar; rest of the upper surface pale brown, the greater wing-coverts and rump with a more bluish tinge, the wing-quills darker brown, the concealed bases of the tail-feathers almost black; below pinky-grey, becoming almost white on the chin and bluish-grey on the flanks, under wing-coverts, abdomen and under tail-coverts; tail with the basal two-thirds black, the apical third bluish-white.

Iris yellow to orange-red; bare skin round the eye red; bill purple to black; feet reddish-purple.

Length about 13·5; wing 7·20; tail 5·0; culmen .80; tarsus .95.

Distribution.—The Red-eyed Dove is not very common in South Africa, except in the more thickly wooded districts from Swellendam eastwards; it is found along the south coast of the Colony and extends to Natal, Mashonaland and the Zambesi, but it does not appear to have been yet noticed in the Transvaal. Beyond our limits it is spread over the greater part of Africa as far as Abyssinia and Senegal.

The following are recorded localities: Cape Colony—Swellendam, Knysna, Albany (Layard & S. A. Mus.), East London (Rickard), King William's Town (Trevelyan), Port St. John's (S. A. Mus.); Natal—common throughout (Woodward and Millar); Orange River Colony (Holub); Bechuanaland—Lake Ngami (Andersson and Fleck); Rhodesia—Umfuli River, October (Ayres), near Salisbury, scarce (Marshall), near Victoria Falls (S. A. Mus.); German South West Africa—Cunene River (Andersson); Zambesi valley (Alexander).

Habits.—The Woodwards state as follows: "These Doves are very common throughout the country, and their loud and pleasant cooing is heard wherever there is any cover for them during the warmer months of the year. They are sometimes seen in large flocks, but as a rule go about in pairs, and feed principally on tree berries. The natives have no love for these birds, as they devour a considerable quantity of grain during the planting season; but there would not be much loss if care were taken to plant the seed deeper. They get very fat during the summer and are excellent eating. This Dove lays its two white eggs on a few sticks, which are merely an apology for a nest, generally placed in a low tree."

Two eggs taken near Durban on June 1, by Mr. A. D. Millar, now in the South African Museum, are pure white, smooth and rounded oval in shape; they measure 1·20 × .95.

635. *Turtur ambiguus*. *Bocage's Red-eyed Dove.*

Turtur semitorquatus (*nec Riipp.*), *Kirk, Ibis*, 1864, p. 330.

Turtur ambiguus, *Bocage, Orn. Angola*, p. 386 (1881); *Shelley, B. Afr. i.*, p. 136 (1896); *Reichenow, Vög. Afr. i.*, p. 416 (1901).

Turtur decipiens (*nec Finsch & Hartl.*) *Sharpe, ed. Layard's B. S. Afr.* p. 567 (1884).

Description.—Closely resembling *T. semitorquatus*, but with the forehead and crown darker and washed with sepia, the abdomen white, tinged with grey on the sides, and the under tail-coverts pale grey strongly edged with white.

Iris yellow; skin round the eye red; bill dark brown; feet pinkish.

Length about 12·0; wing 6·25; tail 4·75; culmen ·60; tarsus 1·0.

Distribution.—This Dove was first discriminated by Bocage, who received an example from Angola; it was obtained at Tete, by Kirk, many years ago, while lately several specimens have reached the South African Museum from Dr. Stoehr, obtained on the Luangwa River and at N'tambwa's, north of the middle Zambesi, near Feira. It has also been met with round Victoria Nyanza and on the Upper Nile.

636. *Turtur capicola*. *Cape Turtle Dove.*

La Tourterelle à collier du Cap, *Levaillant, Ois. d'Afr.* vi, p. 79 (1808). *Columba risoria*, *Burchell, Travels* i, pp. 213, 318, 501 (1822).

Columba vinacea var. *capicola*, *Sundevall, K. Vet. Akad. Handl.* ii, no. 3, p. 54 (1857); *Grill, ibid.*, no. 10, p. 51 (1858) [Cape and Knysna].

Turtur semitorquatus (*nec C. semitorquata Gm.*) *Gurney, Ibis*, 1860, p. 214 [Natal]; *P. L. Sclater, P.Z.S.*, 1866, p. 23 [Windvogelberg]; *Layard, B. S. Afr.* p. 260 (1867); *Gurney, Ibis*, 1873, p. 259.

Turtur albiventris, *Shelley, Ibis*, 1875, pp. 60, 83; *Holub & Pelzeln, Orn. Süd-Afr.* p. 172 (1882).

Turtur capicola, *Finsch & Hartl. Vög. Ost-Afrikas*, p. 548 (1870); *Gurney, Ibis*, 1873, p. 259; *Oates, Matabeleland*, p. 322 (1881); *Butler, Feilden and Reid, Zool.* 1882, p. 338; *Shelley, Ibis*, 1883, p. 313; *Sharpe, ed. Layard's B. S. Afr.* p. 567 (1884); *Salvadori, Cat. B. M. xxi*, p. 424 (1893); *Rendall, Ibis*, 1896, p. 174; *Shelley, B. Afr. i*, p. 137 (1896); *Woodward Bros. Natal B.* p. 132 (1899); *Marshall, Ibis*, 1900, p. 261; *Reichenow, Vög. Afr. i*, p. 414 (1901); *Haagner, Ibis*, 1902, pp. 573, 579; *Whitehead, Ibis*, 1903, p. 234. *Streptopelia capicola*, *Ayres, Ibis*, 1873, p. 282, 1880, p. 109; *Sharpe, Ibis*, 1904, p. 6 [Deelfontein].

“Tortel Duif” of Dutch; “Ihobi” (the same name as that given to *T. semitorquata*) of the Zulus.

Description. Adult.—Crown and head mauve-grey, becoming more pink on the lower neck, at the base of which is a broad black semi-collar; rest of the upper surface pale brown, becoming slaty-blue on the wing-coverts and inner secondaries; primary coverts

and quills very dark brown, with narrow paler edgings; central tail feathers like the back, others tipped with white, increasingly so towards the outermost pair, which are white on their outer webs and on the apical half of the inner webs, the concealed bases being black; a black line along the lores between the eyes and the beak; lower surface pearly-grey with a slight pink tinge, shading into white on the chin, abdomen and under tail-coverts; tail below with the basal half black, the apical white.

Iris black; bill black; legs dark red to purple.

Length 11·0; wing 5·80; tail 4·5; tarsus .90; culmen .57.

The sexes are alike; a young bird is duller in colour and has paler edges to the feathers.

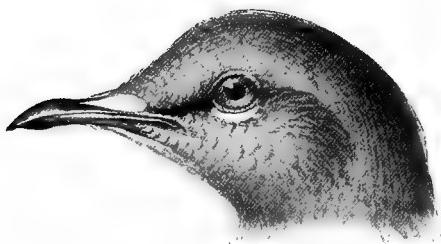


FIG. 53.—Head of *Turtur capicola*. $\times \frac{1}{2}$

Distribution.—The Cape Turtle Dove is very common throughout the greater part of South Africa, wherever there are a few trees and water, though in thickly wooded districts, such as the lower portion of Natal, it is not so common as the Red-eyed Dove. In Damaraland, Nyasaland and East Africa it is replaced by the subspecies, *T. c. damarensis*, but intermediate forms occur, so that it is difficult to draw a line of separation between their ranges.

The following are the principal recorded localities: Cape Colony—Cape division, where very common and resident (S. A. Mus.), Mossel Bay (Oates), Knysna (Victorin), Port Elizabeth and East London (Rickard), Tulbagh, Caledon and Hanover (S. A. Mus.), Deelfontein, rather local (Seimund), Windvogelberg in Cathcart (Boulger), Orange River, near Aliwal North, rather common (Whitehead); Natal—common in the upper country and in Zululand (Woodward), Richmond road and Newcastle (Butler, Feilden and

Reid); Orange River Colony—Heilbron district (B. Hamilton); Transvaal—Potchefstroom and Rustenburg (Ayres), Johannesburg and Modderfontein (Ross and Haagner); Rhodesia—near Salisbury (Marshall), Victoria Falls (S. A. Mus.).

Habits.—The Cape Turtle Dove is one of the commonest birds in Cape Town and the suburbs, where its constant harsh cooing becomes somewhat wearisome; it is generally about in pairs, though a good many may sometimes be seen together feeding on the ground; it is comparatively tame and allows a quite near approach; its food consists of grain and seeds, and is almost entirely obtained on the ground.

It nests near Cape Town in September, a little later, from October to December, in Natal, while Eriksson and Marshall state that it can be found breeding at almost any time during the year. The nest is constructed of a few sticks, so loosely put together that the eggs can usually be seen through when looked at from below. The sticks form a flat platform, and on it are laid two shiny white eggs of oval shape with equally round ends measuring 1·10 to 1·20 × ·87 to ·90.

637. *Turtur capicola damarensis*. *Damara Turtle Dove.*

La Tourterelle blonde, *Levaillant, Ois. d'Afr.* vi, p. 78, pl. 268 (1808).

Turtur damarensis, *Finsch & Hartl. Vög. Ost-Afr.* p. 550 (1870);

Salvadori, Cat. B. M. xxi, p. 426 (1893); *Fleck, Journ. Ornith.* 1894, p. 389; *Shelley, B. Afr.* i, p. 187 (1896); *Alexander, Ibis*, 1900, p. 428.

Streptopelia damarensis, *Gurney in Andersson's B. Damaraland*, p. 233 (1872).

Turtur capicola damarensis, *Reichenow, Vög. Afr.* i, p. 414 (1901).

Description.—Very similar to *T. capicola* but paler throughout, especially on the forehead, which is nearly white. Dimensions slightly smaller than those of the typical form.

Distribution.—This bird was first clearly distinguished by Finsch and Hartlaub, who described an example from Damaraland obtained by Andersson. It appears to replace the typical form throughout German South-west Africa, Angola, Nyasaland, and East Africa. Two Turtle doves from Potchefstroom in the South African Museum do not appear to be distinguishable from those obtained in the neighbourhood of Cape Town, but a specimen collected by Bradshaw

near Upington on the Orange River is distinctly paler throughout and should undoubtedly be referred to the present subspecies.

Habits.—In this respect the Damara Turtle Dove doubtless agrees with the typical subspecies. Andersson writes as follows: “This is the most abundant species of Dove in Damaraland and the parts adjacent. It cannot be strictly said to be a gregarious species; yet numbers are often found in close proximity both on trees and on the ground, and rise in one flock when flushed, producing a great noise by the rapid concussion of their wings above their backs. They seek on the ground for their food, which consists almost exclusively of insects. They build in small trees, generally at the extremity of a bough, constructing a rough nest of a few twigs, with no lining of any kind. The eggs are two in number, of a pure white. I have observed these Doves building on August 20, and have found their eggs abundantly at the end of December; so that it is probable they produce two broods in the year.”

638. *Turtur senegalensis.* *Laughing Dove.*

Columba senegalensis, Linn. *Syst. Nat.* 12th ed, i, p. 283 (1766).

La Tourterelle maillée, *Levaillant, Ois. d'Afr.* vi, p. 82, pl. 270 (1808).

Turtur senegalensis, *Layard, B. S. Afr.* p. 261 (1867); *Gurney, Ibis*,

1868, p. 47 [Natal]; *Ayres, Ibis*, 1871, p. 261; *Gurney in Andersson's B. Damaral.* p. 232, (1872); *Ayres, Ibis*, 1877, p. 346; *Shelley, Ibis*, 1882, p. 359 [Mashonaland]; *Butler, Feilden and Reid, Zool.* 1882, p. 338; *Shelley, Ibis*, 1883, p. 315; *Sharpe, ed. Layard's B. S. Afr.* pp. 568, 854 (1884); *Salvadori, Cat. B. M. xxi*, p. 448 (1898); *Bryden, Gun and Camera*, p. 289 (1893); *Fleck, Journ. Ornith.* 1894, p. 389; *Shelley, B. Afr.* i, p. 187 (1896); *Rendall, Ibis*, 1896, p. 174; *Sharpe, Ibis*, 1897, p. 515 [Eshowe]; *Woodward Bros. Natal Birds*, p. 132 (1899); *Marshall, Ibis*, 1900, p. 261; *Alexander, Ibis*, 1900, p. 428; *Reichenow, Vög. Afr.* i, p. 406 (1901); *Haagner, Ibis*, 1902, p. 573; *Whitehead, Ibis*, 1903, p. 284; *Shortridge, Ibis*, 1904, p. 201.

“Leeba Khoroana” of Basutos (Murray).

Description. Adult Male.—Head, cheeks and neck a greyish-pink, becoming on the mantle and inner part of the wings rufous, mottled slightly with slate; shoulders, wing-coverts and rump slaty-blue; quills blackish with narrow light edges; upper tail-coverts and two central pair of tail-feathers black, other tail-feathers with increasing amounts of white towards the tip and black bases; round the sides and front of the neck a collar of bifid feathers, the tips of which are rufous red, the bases black; breast and throat pink, becoming almost white on the throat, slaty-blue on the lower

breast and white on the abdomen and lower tail-coverts; three pairs of outer tail-feathers with marked black basal and white apical halves.

Iris black to hazel; bill black with a purplish tinge; legs dark red to purplish. Length 10·40; wing 5·45; tail 4·60; culmen .58; tarsus .80.

The sexes are alike.

Distribution.—The Laughing Dove is found throughout the African Continent from Algeria and Egypt to Cape Town; a closely allied species replaces it in Western Asia, extending to Turkestan and Central India. In South Africa the Laughing Dove seems to be everywhere fairly common and occurs in all the Colonies and territories, though it appears not to be quite so abundant as *T. capicola*.

The following are the chief recorded localities: Cape Colony—Cape division (S. A. Mus.), Orange River near Aliwal North (Whitehead), Grahamstown, rare (Layard), Port Elizabeth, rare (Brown), King William's Town, rare (Trevelyan), St. John's River and Pondoland (S. A. Mus.); Natal—Durban (S. A. Mus.), Maritzburg (Fitzsimmons), near Colenso (Reid), Eshowe in Zululand (Woodward); Basutoland, common (Murray); Transvaal—Marico and Rustenburg (Ayres), near Barberton (Rendall), near Johannesburg (Haagner); Bechuanaland—Lake Ngami (Andersson), north Kalahari (Bryden); Rhodesia—Mashonaland (Ayres), Mazoe (Marshall); German South-west Africa—throughout (Andersson); Portuguese East Africa—Tete (Kirk) and Chicowa (Alexander) on the Zambesi.

Habits.—The Laughing Dove is so called in consequence of its peculiar note, which somewhat resembles a human laugh. It is a tame and confiding bird and can often be seen about Cape Town and the neighbourhood in much the same situations as the Cape Turtle Dove, though it is not nearly so abundant as the latter. It is often found about the thorn bushes along the rivers up country, and in Marico, in the Transvaal, according to Ayres, frequents the open threshing floors of the farmers in search of grain. The nest is built in much the same situation, and of very much the same materials as that of the Cape Turtle Dove. Eriksson found on December 6, on the Limpopo River, in the North-east Transvaal, four nests, one with only one egg, the others each with three, all fresh; while the South African Museum has a clutch of two taken on the Umgeni, near Durban, on November 10, by Mr. Millar. These are pure white smooth and shiny, and measure 1·05 × .85.

Genus IV. ŒNA.

Type.

Œna, Swains., Class. Birds, ii, p. 349 (1837) *Œ. capensis*.

Bill very slender and pointed ; the horny portion exceeding the soft basal portion in length ; wings pointed, the second quill the longest ; tail very long and graduated ; the middle feathers more than twice as long as the outer pair and considerably longer than the

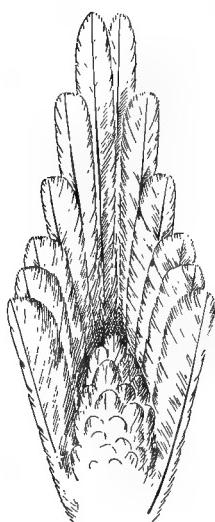


FIG. 54.—Tail of *Œna capensis* from below. $\times \frac{2}{3}$

wing ; feet slender, the tarsus about equal to the middle toe without the claw ; metallic spots present on the wings and two dark bands across the rump ; sexes distinct.

Only one species of this genus has been hitherto recognised ; this is spread over Tropical and South Africa and extends into Arabia and Madagascar.

639. **Œna capensis.** *Namaqua Dove.*

Columba capensis, Linn. Syst. Nat. 12th ed. i, p. 286 (1766) ; *Burchell, Travels*, i, pp. 327, 501 (1822) ; *Grill, K. Vet. Akad. Handl. Stockholm*, ii, no. 10, p. 51 (1858).

La Tourtelette, *Levaillant, Ois. d'Afr.* vi, p. 88, pls. 273-5 (1808).

Œna capensis, *Gurney, Ibis*, 1865, p. 270 [Natal] ; *Layard, B. S. Afr.*

p. 258 (1867); Ayres, *Ibis*, 1871, p. 261; Gurney, in Andersson's *B. Damaral.* p. 235 (1872); Buckley, *Ibis*, 1874, p. 385; Shelley, *Ibis*, 1875, pp. 62, 83; Oates, *Matabeleland*, p. 322 (1881); Shelley, *Ibis*, 1882, p. 359; Holub & Pelzeln, *Orn. Süd-Afr.* p. 171 (1882); Butler, *Feilden and Reid, Zool.* 1882, p. 338; Shelley, *Ibis*, 1883, p. 328; Sharpe, ed. *Layard's B. S. Afr.* pp. 572, 854 (1884); Symonds, *Ibis*, 1887, p. 333; Salvadori, *Cat. B. M.* xxi, p. 501 (1893); Bryden, *Gun and Camera*, p. 70 (1893); Fleck, *Journ. Ornith.* 1894, p. 389; Shelley, *B. Afr.* i, p. 138 (1896); Woodward Bros. and Sharpe, *Ibis*, 1897, pp. 409, 516; Woodward Bros. *Natal B.* p. 133 (1899); Marshall, *Ibis*, 1900, p. 262; Alexander, *Ibis*, 1900, p. 428; Reichenow, *Vög. Afr.* i, p. 429 (1901); Haagner, *Ibis*, 1902, pp. 573, 579; Whitehead, *Ibis*, 1903, p. 234; Sharpe, *Ibis*, 1904, p. 7 [Deelfontein].

"Namaqua Duif" of the Dutch; "Igombosa" of Zulus (Woodward).

Description. Adult Male.—Forehead, front of the head, chin, throat and upper breast black; rest of the head, sides of the neck and most of the wing-coverts mauve-grey; back, inner part of the wings and rump pale brown; a patch of metallic peacock blue on the outer web of some of the tertaries, a double dark brown band across the rump with a dirty white band between; wing-quills cinnamon edged and tipped with black, upper tail-coverts and tail ashy, the tail largely tipped with black, the outer feathers with an apical edging of white; the lower breast and abdomen white, the under tail-coverts black; axillaries black; under wing-coverts cinnamon.

Iris brown, bill, base purple, apex orange; legs purple. Length (in flesh) 10·5; wing 4·2; tail 5·80; culmen .53; tarsus .55.

The female has no black on the head or breast, the forehead and breast being white to mauve-grey; the crown and nape are brown like the back; the white on the outer pair of tail-feathers also is more developed, especially on the outer web; bill blackish; feet dark purplish-grey.

The young bird is like the female but has a black band on the chest; there is no metallic spot on the wings or transverse band on the rump; most of the wing-coverts and scapulars are conspicuously tipped with white or pale fawn with a subterminal band of black; bill black.

Distribution.—The Namaqua Dove is found all over Africa from Senegal and Khartoum southwards to Cape Colony, it also ranges across the Red Sea into Arabia and has been obtained in the Islands of Socotra and Madagascar.

In South Africa it is generally distributed throughout, though much more abundant in the dryer western and central portions. It appears to be partially migratory, as although it has been met with in the western Transvaal and German South-west Africa throughout the year, it visits, so far as our records go, Cape Colony and Natal only in summer.



FIG. 55.—*Œna capensis*.

The following are recorded localities with dates : Cape Colony—Cape division, December, Tulbagh, December, Worcester, December, Beaufort West, October, Hanover, September (S. A. Mus.), Wellington in Paarl division, January (Shelley), Deelfontein, resident (Seimund), Orange River near Upington, January (Bradshaw), near Aliwal North (Whitehead), Hay division, September, December (Burchell), Harts River, January (Ayres), Oudtshoorn, December (Victorin), King William's Town (Trevelyan); Natal—Ladysmith and Blaauw Krantz River, November (Reid), Zululand, October (Woodward Bros.); Orange River Colony—Kroonstad (Symonds), Vrededorf Road (B. Hamilton); Transvaal—Potchefstroom, January, May and July (Ayres), near Wolmeranstad, July (B. Hamilton), Upper Limpopo, July (Oates), near Johannesburg (Haagner); Bechuana-

land — Mangwato, December (Ayres), Tati, September (Oates) ; Rhodesia—near Victoria Falls, September (S. A. Mus), Mashonaland, scarce (Marshall) ; German South-west Africa—throughout, most abundant in Great Namaqualand (Andersson and Fleck) ; Portuguese East Africa—Chicowa on the Zambesi (Alexander).

Habits.—The Namaqua Dove is a most abundant and familiar bird in the interior of the country, and is generally to be seen in the neighbourhood of farm houses, probably because food and water are to be found in the vicinity.

From the dates of collection it appears to be probable that this Dove is only a summer migrant to the greater part of the country, though apparently resident in German territory and the western Transvaal. It is a purely ground-feeding bird and runs very rapidly, so that it was frequently mistaken by Layard for a rat ! it feeds entirely on grain and grass seeds, and has a deep plaintive “coo.” The males will coquet with any female they meet, and are described by Layard as very salacious. The nest is usually placed in a mimosa, not very high above the ground, sometimes, however, on the ground or in a hole ; it is the usual carelessly built loose platform of the Family, made of sticks and fibrous roots ; the clutch consists of two oval eggs equally rounded at both ends. These are white, rosy tinted when fresh, owing to the yoke shining through the fine smooth shell ; when blown they have a slight greenish tinge. They measure .80 × .60.

Genus V. TYMPANISTRIA.

Type.

Tympanstria, Reichenb. *Nat. Syst. Vög.* p. xxv. (1852) ... T. bicolor.

Bill moderate, the horny tip shorter than the swollen base ; wings slightly rounded, the third and fourth quills the longest, the difference between these and the longest secondaries barely equal to the length of the tarsus ; first quill very peculiar, strongly attenuated for its terminal third ; tail moderate, shorter than the wing, somewhat rounded ; metallic patches present on the wings ; sexes differing slightly.

This genus contains only one species, confined to the Ethiopian region, including Madagascar.

640. *Tympانistria bicolor*. *Tambourine Dove.*

Le Tourterelle tambourette, *Levaillant*, *Ois. d'Afr.* vi, p. 86, pl. 272 (1808).

Columba tympanistria, *Temm.* & *Knip*, *Pig.* i, fam. sec. p. 80, pl. 36 (1808-11).

Peristera tympanistria, *Gurney*, *Ibis*, 1860, p. 214, 1864, p. 359 [Natal]; *Layard*, *B. S. Afr.* p. 262 (1867); *Shelley*, *Ibis*, 1875, p. 84.

Tympانistria bicolor, *Reichenb. Nat. Syst. Vög.* p. xxv (1852); *Woodward Bros.*, *Ibis*, 1898, p. 217; *id. Natal Birds*, p. 134 (1899); *Shortridge*, *Ibis*, 1904, p. 201.

Tympانistria tympanistria, *Butler*, *Feilden and Reid, Zool.* 1882, p. 388; *Shelley*, *Ibis*, 1883, p. 326; *Sharpe*, *ed. Layard's B. S. Afr.* p. 571 (1884); *Salvadori*, *Cat. B. M.* xxi, p. 504 (1898); *Shelley*, *B. Afr.* i, p. 138 (1896); *Reichenow*, *Vög. Afr.* i, p. 424 (1901).

"White Breasted Dove" of some authors; "Isebelu" of the Zulus.

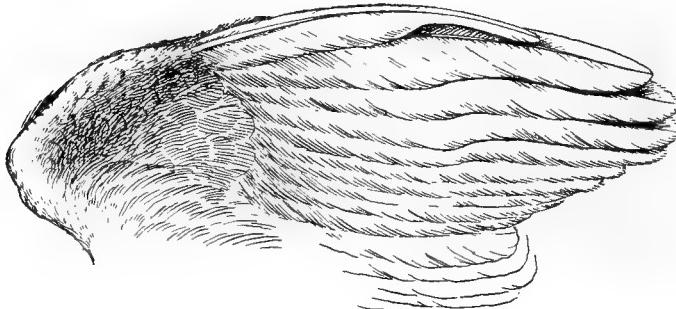


FIG. 56.—Wing of *Tympانistria bicolor* from below. $\times \frac{4}{5}$

Description. Adult Male.—Front of the head, a patch above the ear-coverts and a line above and below the eye connecting them, white; lores, posterior half of the crown, nape and back brown, a little more ashy on the head; wing-quills cinnamon, with marked brown edgings and tips; on the outer web of some of the inner coverts and secondaries metallic spots of blackish-purple; two not well-marked bands of dark brown across the rump; central pair of tail-feathers brown with a wash of cinnamon, outer pair ashy with a broad subterminal band of black; below white throughout, under wing-coverts and axillaries cinnamon, under tail-coverts and flanks ashy-brown.

Iris dark brown, eyelids deep lilac; bill and legs purplish.

Length in flesh, 8·75; wing 4·5; tail 3·65; culmen ·60; tarsus ·80.

In the female the white of the face and under parts is tinged with dusky ; the wing spots are black and not metallic.

A young bird is brown above throughout, with transverse bands of rufous on the coverts and secondaries, and without the metallic spots ; the lower surface is grey and also shows signs of transverse rufous and brown bands on most of the feathers of the neck and breast.

Distribution.—The Tambourine Dove is confined to the more wooded portions of Africa, south of the Gold Coast in the west, of Uganda in the centre, and of Mombasa in the east. It has also been obtained in the islands of Fernando Po, Comoro and Madagascar.

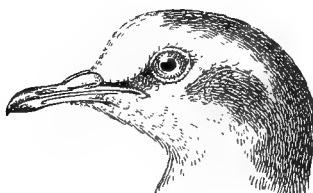


FIG. 57.—Head of *Tympانistria bicolor*. $\times \frac{1}{2}$

In South Africa the Tambourine Dove has been found only in the wooded districts along the South and East Coasts, and is apparently entirely absent from the central and western districts. The following are the only recorded localities : Cape Colony—Knysna (Layard and S. A. Mus.), East London, scarce (Rickard), King William's Town, scarce (Trevelyan), Port St. John's, January to March (Shortridge in S. A. Mus.) ; Natal—near Durban, common (Shelley, Reid and S. A. Mus.) ; Zululand (Woodward).

Habits.—The Tambourine Dove is only met with in thickly wooded districts, such as are usually found near the coast ; it derives its name from its note ; this is a soft and melancholy “coo coo,” repeated slowly at first and afterwards more quickly, till finally it ends in a more or less prolonged rattle resembling that of a tambourine. Its note is often heard in the middle of the day, when other birds are silent. According to Ayres it is seen in pairs or singly, but not in companies ; it is very active and lively, of rapid flight, and feeds on the seeds of trees which have dropped on the ground, the principal one being that of the castor oil plant.

The nest is built in a low tree, and consists of the usual rough platform of sticks, on which are laid two yellowish-white eggs.

A clutch of two, taken by Mr. A. D. Millar, on December 10th, at Umgeni, near Durban, and presented by him to the South African Museum, are oval, smooth and ivory-white, measuring .95 x .75.

Genus VI. CHALCOPELIA.

Type.

Chalcopelia, Bp. Conspl. Av. ii, p. 67 (1854) C. afra.

Bill slender, the horny tip shorter than the swollen basal portion, wings moderate, not so rounded as in *Tympainistria*, the second quill the longest, first quill normal, not attenuated; tail shorter than the wing, slightly graduated, the difference between the inner and outer feathers about half the length of the tarsus; metallic spots on the scapulars and wings; sexes only slightly different.

One species only, spread over Tropical and South Africa, has been hitherto recognised.

641. Chalcopelia afra. Emerald-spotted Dove.

Columba afra, Linn. Syst. Nat. 12th ed. i, p. 284 (1766).

Le Tourterelle émeraudine, Levaill. Ois. d'Afr. vi, p. 84, pl. 271 (1808).
Columba chalcospilos, Wagler, Syst. Av. Columba, sp. 83 (1827); Grill, K. Vet. Akad. Handl. ii, no. 10, p. 51 (1858) [Knysna].

Peristera afra, Layard, B. S. Afr. p. 262 (1867); Gurney, Ibis, 1868, pp. 48, 164 [Natal].

Peristera chalcospila, Shelley, Ibis, 1875, p. 84.

Chalcopelia afra, Gurney, in Andersson's B. Damara. p. 236 (1872); Oates, Matabeleland, p. 322 (1881); Holub & Pelzeln, Orn. Süd-Afr. p. 176 (1882); Shelley, Ibis, 1883, p. 323; Sharpe, ed. Layard's B. S. Afr. p. 570 (1884); W. Ayres, Ibis, 1887, p. 60 [Rovirand]; Salvadori, Cat. B. M. xxi, p. 506 (1893); Fleck, Journ. Ornith. 1894, p. 389; Shelley, B. Afr. i, p. 137 (1896); Rendall, Ibis, 1896, p. 174; Sharpe, Ibis, 1897, p. 515 [Eshowe]; Woodward Bros. Natal B. p. 184 (1899); Marshall, Ibis, 1900, p. 270; Alexander, Ibis, 1900, p. 428; Reichenow, Vög. Afr. i, p. 426 (1901).

“Isikombazena” of Zulus (Woodward).

Description. Adult male.—Crown and occiput slaty-grey, palest on the forehead; mantle and wings earthy-brown; quills and primary coverts cinnamon, edged on the outer web and largely tipped with dark-brown; on the inner webs of some of the inner coverts and inner secondaries some metallic patches of steely-green

or blue; two broad black bands across the rump separated by a pale earthy band; tail-coverts and tail brown, tipped with black, the outer pair ashy at the base and tip, with a subterminal band of black and a white basal half on the outer web; below vinaceous-pink, paler on the chin and abdomen; under tail-coverts black, the outer ones white; under wing-coverts and axillaries cinnamon.

Iris dark-brown, space round eyes slate colour; bill deep purple horn; legs deep lilac.

Length 8·5; wing 4·3; tail 3·40; tarsus .75; culmen .60.

The female is slightly smaller, has the metallic spots on the wings of a golden-green, and is a darker vinous-pink on the lower side.

Distribution.—The Emerald-spotted Dove is found over the greater part of Africa from Senegal, Abyssinia and Somaliland southwards. In South Africa it is chiefly met with in the wooded districts, but it is more widely spread and is more abundant than the Tambourine Dove, extending to the Transvaal, Rhodesia and the northern part of German South-west Africa.

The following are recorded localities: Cape Colony—Worcester and Long Kloof in Uniondale (Layard), Knysna, October (Victorin), Uitenhage and East London (Rickard), King William's Town (Trevelyan); Natal—Durban and Pinetown, March (Shelley), Blaauwkrantz river near Colenso, May (Oates), Eshowe in Zululand (Woodward); Transvaal—Barberton (Rendall), Swaziland, July (Buckley in Brit. Mus.), Rovirand in Zoutpansberg and Rustenburg (W. Ayres); Bechuanaland—Moxowi in the Kalahari and Ngami (Fleck); Rhodesia—near Victoria Falls common (W. L. Sclater), Shagari river in Mashonaland (Marshall); German South-west Africa—N. Damaraland and Ovampoland (Andersson); Zambesi Valley (Alexander).

Habits.—The Emerald-spotted Dove resembles the Tambourine Dove in its habits, but frequents somewhat more open ground, such as broken bush, clearings near the banks of rivers and such-like localities; it obtains its food, which consists chiefly of grass seeds, on the ground, and has a gentle cooing note, "hoo hoo hoo-hoo" in gradually descending scale, which is very characteristic, and once heard is never likely to be forgotten. Its nesting habits resemble those of other Doves; Andersson writes as follows:—"This Dove constructs a nest of a few rough sticks in a bush or at the extremity of a bough of some low stunted tree. The sticks composing the nest are so loosely put together that a person looking at it

from below may see the two white eggs through the nest. It is seldom that more than one egg is hatched. The young are usually fledged by the middle of January." Eggs in the South African Museum, taken in November near Durban, are smooth, oval, and white with a creamy tinge; they measure 1·0 x ·75.

Genus VII. HAPLOPELIA.

Type.

- | | |
|--|-------------|
| Aploelia , <i>Bp. Conspl. Av.</i> ii, p. 66 (1854) | H. larvata. |
| Haploelia , <i>Sundev. Tentamen</i> , p. 100 (1872) | H. larvata. |

Form stout and robust; bill moderate, the terminal horny portion shorter than the basal portion; wing somewhat rounded, the third primary the longest, this exceeds the longest secondary by more than the length of the tarsus; tail shorter than the wing, slightly graduated; tarsus stout and strong, slightly exceeding in length the middle toe without claw; no metallic spots but a general metallic sheen on the upper portion of the back; sexes closely resembling one another.

Some four species of this genus, one of which is South African, have been hitherto recognised; all are confined to the Ethiopian Region.

642. **Haploelia larvata.** *Lemon Dove.*

Le Tourterelle à masque blanc, *Levaill. Ois. d'Afr.* vi, p. 80, pl. 269 (1808).

Columba larvata, *Temm. & Knip. Pig.* i, fam. sec. p. 71, pl. 31 (1808-11); *Grill. K. Vet. Akad. Handl.* ii, no. 10, p. 51 (1858) [Cape division and Knysna].

Peristera larvata, *Layard, B. S. Afr.* p. 263 (1867); *Gurney, Ibis*, 1868, p. 47 [Natal]; *Shelley, Ibis*, 1875, p. 84; *Barratt, Ibis*, 1876, p. 208; *Ayres, Ibis*, 1876, p. 433.

Aploelia larvata, *Holub & Pelzeln, Orn. Süd-Afr.* p. 176 (1882).

Haploelia larvata, *Shelley, Ibis*, 1883, p. 293; *Sharpe, ed. Layard's B. S. Afr.* p. 564 (1884); *Salvadori, Cat. B. M.* xxi, p. 538 (1893); *Shelley, B. Afr.* i, p. 136 (1896); *Sharpe, Ibis*, 1897, p. 515 [Eshowe]; *Woodward Bros. Natal B.* p. 135 (1899); *Reichenow, Vög. Afr.* i, p. 420 (1901); *Shortridge, Ibis*, 1904, p. 201.

"Cinnamon" or "Lemon Dove" of English, "Lamoen Duif" of Dutch.

Description. *Adult.*—Forehead and front of the face white, becoming a metallic-pink (or green in some lights) on the crown, occiput, hind neck and upper portion of the mantle; rest of the upper surface, including the wings and two central tail-feathers

dark earthy-brown ; lateral tail-feathers with the basal two thirds black, the apical third ashy ; below the chin and cheeks are greyish-white, the breast is pink and slightly metallic, changing to cinnamon on the lower breast, abdomen and under tail-coverts ; under wing-coverts, axillaries and sides of the body dark-brown.

Iris, inner circle dusky, outer pink, eyelids and bare skin round the eye pink ; bill black ; legs and feet dark-pink.

Length 12 ; wing 6·0 ; tail 4·20 ; culmen .50 ; tarsus 1·05.

The female is slightly duller in colour and smaller in size. A young bird has the front of the face dirty-white ; there is no metallic sheen, and the general colour above and below is brown with narrow rufous bars and tips to most of the feathers.

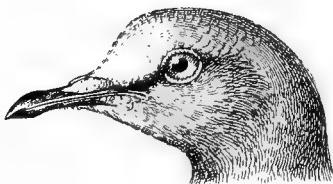


FIG. 58.—Head of *Haploelia larrata*. $\times \frac{1}{2}$

Distribution.—The Lemon Dove was first discovered by Levailant in the Outeniqua forests of what is now the division of Knysna; it is entirely confined to the densely wooded districts of the Colony, Natal and the Transvaal; north of the Zambesi it is replaced by three closely allied subspecies from Nyasaland, Shoa and West Africa respectively.

The following are recorded localities ; Cape Colony—Cape division, January, June, July and November (Victorin and S. A. Mus.), Knysna, January, April, May and July (Andersson and Victorin), George (Atmore), King William's Town (Trevelyan), Port St. Johns, rare (Shortridge); Natal—Durban, April (Shelley), Eshowe in Zululand (Woodward); Transvaal—Macamac in Lydenburg, June, July (Barratt and Ayres).

Habits.—The Lemon Dove is confined to the forest and thick bush, and is seldom or ever found outside. It is generally seen on the ground seeking its food, which consists chiefly of forest berries ; it is shy and by no means easy to see or procure, but can often be heard rustling among the fallen leaves, and thus causing disappointment to the sportsman who is lying in wait for buck ; it has a

peculiar short, melancholy coo. Shelley found two nests of this bird on April 11th, in the bush near Durban; they were placed about four feet from the ground in low creepers close to the path and contained two eggs each. The nest was a flimsy structure of sticks.

Eggs in the South African Museum, taken near Durban by Mr. Millar in November, are oval in shape, white, with a slight tinge of brown, and measure about $1\cdot0 \times .75$.

Order XI. PTEROCLITES.

The Sandgrouse, for which this special Order was formed by Huxley, are moderately sized birds, usually of a speckly yellowish colour, and of swift flight; they are confined to the Old World where they are found principally in desert or semi-desert districts.

The bill is small and without a cere; the feet are feathered to the base of the toes, and the hallux is small, or in some cases absent; the rectrices vary in number from fourteen to eighteen; the young are hatched, covered with down and able to care for themselves.

This group was formerly associated with the Game-birds, but shows in a good many of its anatomical characters a close relationship to the Pigeons; this is especially the case as regards certain osteological characters. Beddard also traces a connection with the Limicolæ or waders.

The following are the principal anatomical characters: Skull schizognathous and holorrhinal; basipterygoid processes present; aftershaft small; oil-gland nude; crop present; two carotids; cæca long; the two deep plantar tendons fuse and then divide to supply the anterior toes, the hallux having an independent tendon altogether, the flexor hallucis brevis; all the five Garrodian thigh muscles present.

All the Sandgrouse fall into a single family, divisible into three genera, two of which are represented in South Africa.

Key of the Genera.

- A. Tail-feathers rounded *Pterocles*, p. 185.
- B. Central tail-feathers elongated, attenuated and pointed, extending beyond the others *Pteroclurus*, p. 191.

Family I. PTEROCLIDÆ.

Genus I. PTEROCLES.

Type.

Pterocles, Temm., *Man. Ornith.* p. 299 (1815) *P. arenarius*.

Bill slender and arched, no cere; nostrils elongated, bordered above by feathers; wings pointed and long; tarsi covered with small feathers in front, reticulate behind; toes naked, hallux small, almost rudimentary, jointed above the level of the other toes; tail of fourteen or sixteen feathers, rounded, central feathers not produced beyond the others to any extent.

This genus, containing some ten species, is spread all over Africa including Madagascar, southern Europe and central and southern Asia, from Spain to India. Three species occur within our limits.

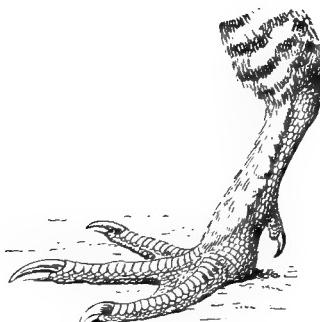


FIG. 59.—Left foot of *Pterocles bicinctus*. $\times \frac{1}{2}$

Key of the Species.

- A. With little round white spots above and below.
 - a. Chin slaty-grey *P. variegatus*, ♂, p. 186.
 - b. Chin pale buff *P. variegatus*, ♀, p. 186.
- B. Not spotted with white above or below.
 - a. Under tail-coverts uniform deep chestnut.
 - a¹. Throat yellow, bordered by a black line... *P. gutturalis*, ♂, p. 187.
 - b¹. Throat yellow without a black band ... *P. gutturalis*, ♀, p. 187.
 - b. Under tail-coverts closely barred with black.
 - a¹. Chest uniform olive, followed by a bar of white and another of black *P. bicinctus*, ♂, p. 189.
 - b¹. Throat spotted, rest of lower surface barred with black *P. bicinctus*, ♀, p. 189.

643. **Pterocles variegatus.** *Spotted Sandgrouse.*

Tetrao (Pterocles) variegatus, *Burchell, Travels*, ii, p. 345 (1824).

Pterocles variegatus, *Smith, Report Exped. C. Afr.* p. 56 (1836); *id. Ill. Zool. S. Afr. Aves*, pl. x (1838); *Layard, B. S. Afr.* p. 279 (1867); *id. Ibis*, 1869, p. 375; *Ayres, Ibis*, 1871, p. 262; *Gurney, in Andersson's B. Damaraland*, p. 242 (1872); *Elliot, P. Z. S.* 1878, p. 244; *Shelley, Ibis*, 1882, p. 360 [Bechuanaland]; *Holub & Pelz., Orn. Süd-Afr.* p. 181 (1882); *Sharpe ed. Layard's B. S. Afr.* p. 578 (1884); *Nicolls & Eglington, Sportsm. S. A.* p. 111, pl. xi, fig. 56 (1892); *Grant, Cat. B. M.* xxii, p. 22 (1893); *id. Game Bds.* i, p. 17 (1896); *Fleck, Journ. Ornith.* 1894, p. 384; *Shelley, B. Afr.* i, p. 184 (1896); *Reichenow, Vög. Afr.* i, p. 307 (1900).

"Gheel Patrijs" of Dutch (Nicolls & Eglington).

Description.—*Adult Male*.—Crown of the head very dark brown with pale buffy edges to the feathers; back and wings ashy-black, all the feathers largely tipped with olive-yellow; a number of small white spots, generally distributed throughout; quills dusky with white shafts, some of the inner ones with paler whitish tips, edge of the wing pale rufous; tail of fourteen feathers, dusky-black with buff tips and cross-bars; below, throat, lores and sides of the face, above and below the eye, lilac-grey; ear-coverts pale buff; breast dull rufous, passing into buff on the abdomen and under tail-coverts; a number of round white spots on the breast, like those on the back.

Iris dark brown; eyelids gamboge; bill black; feet and claws dusky-yellow.

Length 9·25; wing 6·0; tail 3·0; tarsus 1·1; culmen .35.

The female differs from the male in having the chin, throat and eye-stripes pale buff; the belly and thighs are pale rufous-buff, indistinctly barred with white.

Distribution.—The Spotted Sandgrouse does not appear to have been met with south of the Orange River; but north of that river is found throughout the western portion of our area as far as the Okavango River, though nowhere very abundant.

The following are recorded localities. Cape Colony—near Griquatown (Burchell, type), Kimberley (Brit. Mus.), Fourteen Streams in Griqualand West (B. Hamilton), near Kuruman (Smith and Exton); Transvaal—on the Limpopo and Marico Rivers (Ayres); Bechuanaland—Limonie Pan near Bamangwato (Ayres), Kalahari (Fleck); German South-west Africa—Damaraland (Andersson).

Habits.—This species, though less widely distributed and not so common as the Namaqua Sandgrouse, resembles it in its habits.

It is found during the day singly or in pairs scattered over the grassy veld in search of seeds and berries which form its food; in the morning and evening it resorts in large numbers, often in company with the other sandgrouse, to watering places, circling round high up in the air and descending very suddenly with a dash. Its note is less shrill and piping than that of the other species. The eggs are described by Layard as pale dull greenish-brown spotted with light brown and indistinct purple, and further spotted with dark brown. Eriksson states that three eggs of this bird were brought to him by one of his hunters; they were laid on the bare sand in a small depression.

644. *Pterocles gutturalis*. *Yellow-throated Sandgrouse*.

Pterocles gutturalis, Smith, Report Exped. C. Afr. p. 56 (1836); *id. Illustr. Zool. S. Afr. Aves*, pls. 3 (male), 31 (female), (1838-9); Layard, B. S. Afr. p. 278 (1867); Ayres, Ibis, 1869, p. 297, 1871, p. 268, 1878, p. 298, 1885, p. 346; Buckley, Ibis, 1874, p. 385; Elliot, P. Z. S. 1878, p. 241; Oates, Matabeleland, p. 323 (1881); Holub & Pelz, Orn. Süd-Afr. p. 182 (1882); Shelley, Ibis, 1882, p. 359; Sharpe, ed. Layard's B. S. Afr. p. 577 (1884); Nicolls and Eglington, Sportsm. S. A. p. 112, pl. xi, figs. 54, 55 (1892); Grant, Cat. B. M. xxii, p. 25 (1893); Bryden, Gun and Camera, pp. 289, 477 with fig. (1893); Grant, Game Birds, i, p. 19 (1896); Shelley, B. Afr. i, p. 184 (1896); Reichenow, Vög. Afr. i, p. 305 (1900); Haagner, Ibis, 1902, p. 573.

"Nacht Patrijs" of the Dutch.

Description. *Adult Male*.—Crown of the head dusky-black; back and wings yellowish-olive, with black bases to the feathers; primaries, primary coverts and inner secondaries black with pale tips and edges; tail-feathers 16 in number, centre pair like the back, lateral ones black tipped and barred with chestnut; a black band from the base of the bill to the eye; eyebrow, chin, throat, cheeks and ear coverts very pale yellow, followed by a semicircular black band running up to behind the ear-coverts; breast bluish-grey, deepening into a rich chestnut on the abdomen, under tail-coverts and thighs, the latter showing strong traces of transverse black barring.

Iris dusky brown, bill light bluish-horn, toes dusky.

Length about 11·0; wing 8·5; tail 3·75; culmen 1·65; tarsus 1·5.

The female is buffy-yellow, variegated and speckled with black above; the primaries and their coverts black, as in the male; chin,

throat and ear-coverts, yellowish-buff; breast pale buff, mottled and streaked with black; abdomen, thighs and under tail-coverts rich chestnut, narrowly barred with black; centre tail-feathers like the back, buffy-yellow barred with black, lateral ones black, barred and tipped with pale chestnut; size about the same as the male.

The young bird resembles the female but the transverse bands on the mantle are smaller and finer.

Distribution.—The Yellow-throated Sandgrouse was first discovered by Sir Andrew Smith in the neighbourhood of Kurrichaine in the present Rustenburg district of the Transvaal. From the western Transvaal it extends to Bechuanaland and the northern Kalahari, while beyond our limits it is recorded from Nyasaland, Masailand and the mountains of Abyssinia. It does not appear to reach Damaraland. Dr. Howard tells me it is common in Little Namaqualand.

The following are localities. Cape Colony—Litakun near Kuru-man (Smith in S. A. Mus.); Transvaal—Potchefstroom and Rustenburg (Ayres), Marico (Holub), near Johannesburg, scarce (Haagner); Bechuanaland—N. Kalahari (Bryden), Shashi River (Oates).

Habits.—This is the largest and perhaps the most handsome of all the South African Sandgrouse; both in voice and appearance it is likened by Bryden to the Grouse of Scotland. It is usually found in companies of from three to twelve individuals on bare ground not far from water, where it feeds on seeds and small bulbous roots. When crouched on the ground it is very difficult to detect; when flushed it does not run, but rises at once with a powerful flight, accompanied by a whirring sound made by the wings. The note, only heard on the wing, is a short and somewhat harsh "tweet." Like other Sandgrouse they resort to water daily, but not at such regular hours as the other species. They are specially fond of the grain of the Kaffir corn and resort in large numbers to the fields when ready for cutting; in consequence perhaps of this they are generally very good eating, especially when split open and grilled with butter. The eggs, usually three in number, are laid on the bare ground among the grass. They are dusky tawny, marked with lines and blotches of umber forming a zone towards the base, and measure about $1\cdot7 \times 1\cdot09$.

645. **Pterocles bicinctus.** *Double-banded Sandgrouse.*

Pterocles bicinctus, Temm. *Pig. et Gal.* iii, pp. 247, 713 (1823); *Strickland and Sclater, Contr. Orn.* 1852, p. 157; *Layard B. S. Afr.* p. 278 (1867); *Ayres, Ibis*, 1869, p. 298, 1871, p. 269, 1886, p. 292; *Gurney, in Andersson's B. Damaraland*, p. 241 (1872); *Buckley, Ibis*, 1874, p. 385; *Elliot, P. Z. S.* 1878, p. 255; *Oates, Matabeleland*, p. 323 (1881); *Sharpe, ed. Layard's B. S. Afr.* pp. 575, 854 (1884); *Nicolls and Eglington, Sportsm. S. A.* p. 111 (1892); *Bryden, Gun and Camera*, pp. 285, 476 (1898); *Grant, Cat. B. M.* xxii, p. 30 (1893); *id. Game Birds*, i, p. 21 (1896); *Fleck, Journ. Ornith.* 1894, pp. 358, 384; *Shelley, B. Afr.* i, p. 184 (1896); *Alexander, Ibis*, 1900, p. 449; *Reichenow, Vög. Afr.* i, p. 309 (1900).

Description.—*Male.*—Forehead and a transverse band across the crown, white, between which is a wider black band; crown of the head pale reddish-brown streaked with black, nape of the neck, sides of the face, chin, breast and fore half of the wings olive; rest of the upper surface black mottled and barred with pale chestnut,



FIG. 60.—Head of *Pterocles bicinctus*, ♂. $\times \frac{1}{2}$

many of the feathers tipped with white; primaries, primary covert and secondaries black, slightly tipped with white; below, the olive breast is bounded by a narrow white, followed by a narrow black, transverse band; rest of the lower surface narrowly transversely banded with black and white; feathers on the tarsus greyish; under tail-coverts pale chestnut with a few bars of black.

Iris hazel, skin round the eye chrome yellow; bill yellowish-brown; legs yellowish.

Length about 9·0; wing 6·75; tail 3·0; culmen 7; tarsus 1·05.

The female has the whole of the upper parts including the head and neck as well as the breast, like the back of the male, black, mottled and barred with pale chestnut, and often tipped with white;

wing-quills as in the male; chin and throat buffy grey finely spotted with black; lower breast and abdomen as in the male.

Examples from Damaraland and from Griqualand West are, as has been remarked by Ogilvie Grant, much paler and lighter in colour, so much so that they might very well be distinguished under a subspecific name.

Distribution.—This Sandgrouse was first discovered by Levailant on the banks of the Great Fish River in the southern part of Great Namaqualand. It does not appear to extend south of the Orange River except in Little Namaqualand, where Dr. Howard tells me it is common, but northwards it reaches the southern part of Angola and the Zambesi Valley. Its headquarters appear to be Bechuanaland.

The following are recorded localities: Cape Colony—Griqualand West, October (S. A. Mus.), Kuruman (Moffat); Transvaal—Limpopo, May (Ayres), Selati and Sabi Rivers in Lydenburg, April and August (Francis, in S. A. Mus.); Bechuanaland—Makalapsi and Makloutsi Rivers, August (Oates), Kanye (Exton), near Palachwe (Bryden); German South-west Africa, throughout (Andersson and Fleck); Portuguese East Africa—Zambesi Valley, from Tete to Chishomba (Alexander).

Habits.—The Double-banded Sandgrouse very much resembles the other species in habits; it is generally found in flocks, which, however, split up during the breeding season. Its flight is swift and its note a curious shrill whistle. The following is Alexander's account of its habits in the Zambesi Valley. "These birds frequent open spots in the woods, where the soil is loose and stony, and the slopes of hilly banks that are coated with dry grass. They are fond of basking in the sun, remaining in a sleepy condition during most of the day. When on the ground it is difficult to see them, and one almost treads upon them before they rise up, startling one with their flare of wings and noisy "chuk chuk" notes, which are given out simultaneously and with great zest. Out of the breeding season they go together in large batches, sometimes of 30 or 40 in one flock. In habits they might almost be termed crepuscular. Every evening as regular as clock work, and just as dusk is closing in, they wing their way to their watering spots, while, should the night be moonlight, they feed in the vicinity of water."

Ayres found this bird breeding on the banks of the Limpopo in May and June; the eggs, 3 or 4 in number, are laid on the bare ground amongst the short grass. The hen sits very close. The

eggs are brownish-pink, spotted and blotched all over, especially at the thicker end, with a darker shade of the same colour. They measure about $1\cdot37 \times \cdot93$.

Eriksson, who found nests later in August, also on the Limpopo, gives a similar account.

A clutch of two eggs, from about twenty miles north of the Oliphants River in Portuguese East Africa, near the Transvaal border, obtained by Major Sparrow on June 13, agrees well with the description given above, but measure $1\cdot5 \times 1\cdot1$.

Genus II. PTEROCLURUS.

Type.

Pteroclurus, *Bp. Comptes Rend.* xlii, p. 880 (1856) *P. alchata*.

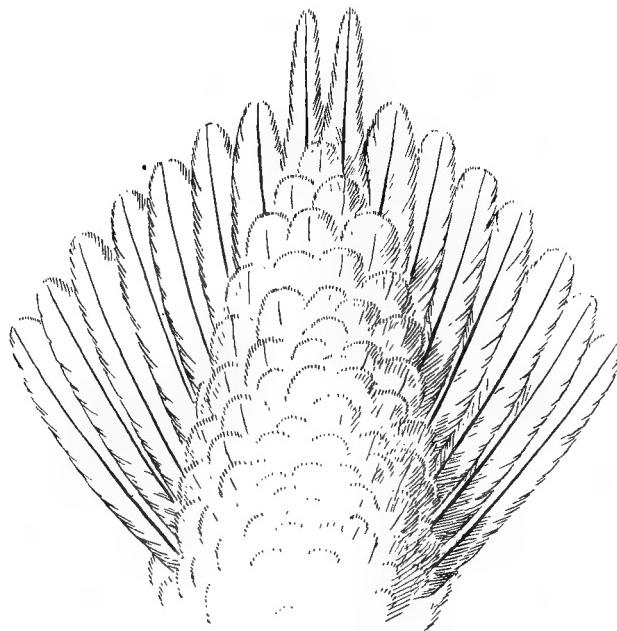


FIG. 61.—Tail of *Pteroclurus namaqua*. $\times \frac{3}{4}$

This genus only differs from *Pterocles* in having the two central tail-feathers produced and somewhat attenuated and pointed; tail of sixteen feathers.

Five species are recognised, spread over Southern Europe and

Asia from Spain to the Indian Peninsula and Africa. Only one of them is found within our limits.

646. **Pteroclurus namaqua.** *Namaqua Sandgrouse.*

Tetrao namaqua, *Gmel.*, *Syst. Nat.* i, p. 754 (1788); *Burchell, Travels* i, pp. 265, 303 (1822).

Pterocles tachypetes, *Temm. Pig. et Gall.* iii, pp. 274, 715 (1815); *Layard, B. S. Afr.* p. 277 (1867); *id. Ibis*, 1869, p. 75; *Ayres, Ibis*, 1871, p. 262; *Bryden, Kloof and Karoo*, p. 315 (1889); *id. Gun and Camera*, p. 289 (1893); *id. Nature and Sport*, p. 33 (1897).

Pteroclurus namaqua, *Gurney*, *in Andersson's B. Dammaral.* p. 242 (1872); *Grant, Cat. B. M.* xxii, p. 10 (1893); *id. Game Bds.* i, p. 11 (1896); *Shelley, B. Afr.* i, p. 183 (1896); *Reichenow, Vög. Afr.* i, p. 318 (1901); *Whitehead, Ibis*, 1903, p. 234; *Sharpe, Ibis*, 1904, p. 4 [Deelfontein].

Pterocles namaqua, *Elliot, Proc. Zool. Soc.* 1878, p. 252; *Bocage, Orn. Angola*, p. 396 (1881); *Holub & Pelz. Orn. Süd-Afr.* p. 182 (1882); *Sharpe, ed. Layard's B. S. Afr.* pp. 574, 854 (1884); *Ayres, Ibis*, 1886, p. 292; *Symonds, Ibis*, 1887, p. 333; *Nicolls and Eglington, Sportsm. S. A.* p. 109 (1892); *Fleck, Journ. Ornith.* 1894, p. 384.

“Namaqua Partridge” of English, “Namaqua Patrijs” or “Kekje Wijn” of Dutch Colonists.

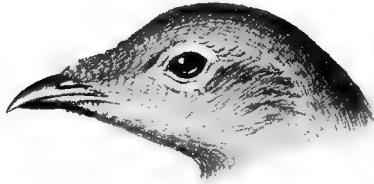


FIG. 62.—Head of *Pteroclurus namaqua.* $\times \frac{1}{2}$

Description. *Adult male.* — Head and back pale brown, the cheeks, sides of the neck and nape suffused with a mustardy yellow tinge, most of the feathers of the back and wing-coverts with a subterminal buffy yellow blotch and a lilac blue, darkening to black, terminal spot; primary-quills dusky black, the inner ones with white inner webs and tips; the greater coverts like the quills; tail of sixteen feathers, the two central ones dusky, becoming black at the tip and produced into a point; lateral ones with conspicuous buff tips; below the chin and throat orange-buff, shading through yellow into pale brown on the chest becoming darker on the lower breast;

thighs and abdomen yellowish-buff; across the breast a narrow white band bordered with rich chocolate-brown; tarsus, feathered to the base of the toes, pale buff.

Iris dark brown, bill bluish-slate, feet and claws lavender.

Length in flesh 10·75; in skin 10·0; wing 6·25; tail 3·30; culmen .50; tarsus .80. (This appears to be a rather small bird compared with that one the dimensions of which are given in the British Museum Catalogue).

The female, which differs considerably from the male, is streaked and mottled with black and on the shoulders with dark brown and white as well; wings and tail as in the male, the central feathers being elongated and attenuated; below buffy-brown, the chin and throat with minute spots, the breast with brown streaks and the lower breast with transverse bars of black; abdomen, under tail-coverts and tarsal feathers pale buffy, unspotted; soft parts as in the male.

Length in flesh 11·25; in skin 10·5; wing 6·5.

A young male resembles the female, but the top of the head and back are more rufous and more barred with black; below, the throat is paler and the breast more rufous than in the adult male.

Distribution.—The Namaqua Partridge, as it is generally called, is found throughout the drier and more desert portion of South Africa from the Karoo and Namaqualand to the Cunene, but not in Natal, the eastern Transvaal or Mashonaland.

The following are localities: Cape Colony—Malmesbury, Tulbagh, Worcester, December, Orange River, near Upington, November, December (S. A. Mus.), Aliwal N., May (Whitehead), East London, rare (Wood), King William's Town district, rare (Pym), Deelfontein, resident (Seimund), Kimberley, June (Brit. Mus.); Orange River Colony—Kroonstad, September (Symonds), Vredfort Road (Hamilton); Transvaal—Potchefstroom, August, November, Marico (Ayres), Irene, November (Shortridge); Bechuanaland—Kalahari (Fleck), Lake Ngami (Bryden); German South-west Africa—throughout (Fleck and Andersson).

Habits.—This bird is found in great abundance all over the Karoo and throughout the dry country; it appears to be a resident in some parts and a partial migrant in others; it is spread all over the country during the day, generally in pairs or small parties, searching for its food, which consists chiefly of grass and other seeds. In the morning just about sunrise and in the evening just before sunset it resorts to pools and rivers, circling round in large

flocks at a great height above the ground and then suddenly descending to drink. At such times large numbers can easily be shot. Its flight is very powerful and swift, and it also runs quickly, though its legs are very short. When flying it often gives vent to a shrill, sharp cry not unlike that of an English plover, whence the Dutch name Kelkje Wijn (*i.e.*, kelkie vane), which is a near imitation of the sound.

The eggs, two in number, are of a light cream colour, spotted with brown and purple; they are oblong, measuring 1·50 to 1·30 × 1·0, and are laid in a slight hollow on the ground. There are examples in the South African Museum, taken by Major Sparrow on the 18th August at Welgevonden, in the Orange River Colony.

The flesh of this bird is very tough, and it is best eaten skinned and stewed.

Order XII. GALLINÆ.

This Order contains the true Game-Birds, such as the Pheasants, Grouse, Turkeys, Brush-Turkeys and Curasows; they can be easily recognised by their short, arched bills, their strong legs, well adapted to walking, and their rounded, rather feeble wings; the tarsus is very generally armed, especially among the males, with a strong sharp spur; the hallux is always present and in all the South African forms is jointed above the level of the other toes; the wing has ten primaries and the fifth secondary is present. The nest is usually placed on the ground, and the young, when hatched, are covered with down and are able to fly almost at once.

The more important anatomical characters are as follows:— Sixteen cervical vertebrae; skull schizognathous and holorrhinal, basipterygoid processes represented by sessile facets, situated far forward on the sphenoidal rostrum; sternum with two deep notches on both sides posteriorly; plantar tendons galline (see Vol. III., p. 2, fig. 2b); oil gland nearly always present and generally tufted; crop present; cæca large; two carotids nearly always present; the five Garrodian thigh muscles present in all the South African species.

Two suborders are generally recognised: one, the Peristeropodes, containing the Brush-Turkeys (*Megapodiidæ*) and the Curasows (*Cracidæ*) confined to the Australian and Neotropical Regions

respectively, the other, the Alectoropodes, in which the hallux is raised above the level of the other toes.

The latter suborder also contains only two families—the Grouse (Tetraonidæ) and the Phasianidæ; all the South African Game Birds are included in the last named family.

Key of the Genera.

- A. Head, neck and throat normal, covered with feathers.
 - a. Tail of fourteen feathers; birds of large size with strong bills and round wings
 - b. Tail of ten or twelve feathers very short, soft and concealed by the upper tail-coverts; small birds with short beaks and pointed wings.....
 - c. Tail of eight feathers, short and concealed; small birds with short beaks and rounded wings.....
 - B. Head and neck covered with feathers, throat bare
 - C. Head and neck naked; a bony outgrowth or helmet on the crown
 - D. Head and neck naked; a tuft of curly feathers on the crown
- Francolinus*, p. 195.
Coturnix, p. 220.
Excalfactoria, p. 226.
Pternistes, p. 214.
Numida, p. 227.
Guttera, p. 233.

Family I. PHASIANIDÆ.

Nostrils never concealed by feathers; tarsi partially or entirely naked and often armed with spurs; hallux jointed to the tarsus above the level of the other toes.

Genus I. FRANCOLINUS.

Type.

- Francolinus**, *Stephens in Shaw's Gen. Zool.*, xi, p. 316
 (1819)..... *F. vulgaris*.

Bill rather stout and hooked; nostrils with an over-hanging operculum; throat feathered; wings somewhat rounded, first primary about equal to the sixth or seventh, second and third generally the longest; tarsi naked, with spurs usually present, especially in the males; tail of fourteen feathers, short, about half the length of the wing.

Sexes sometimes alike, sometimes differing considerably ; plumage chiefly mottled and streaked with shades of brown and yellow.

This is a large genus, containing some forty-five species, chiefly found in Africa but extending into southern Asia from Cyprus to southern China. Out of forty-two African species, recognised by Shelley, ten occur within our limits.

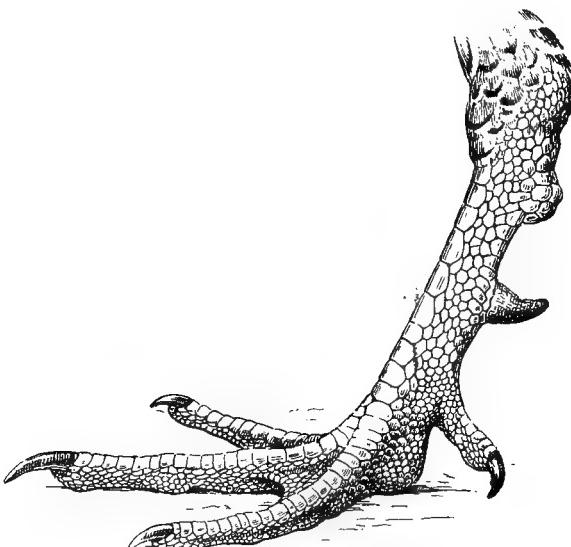


FIG. 63.—Left foot of *Francolinus capensis*, ♂. $\times \frac{1}{3}$.

Key of the Species.

- A. Back and scapulars with whitish or buff shaft-marks.
 - a. Lower breast and belly pale, uniformly barred with black *F. coqui*, p. 197.
 - b. Lower breast and belly not uniformly barred with black.
 - a¹. Rump and upper tail-coverts without whitish shaft marks ; below buffy-white, faintly mottled with black *F. sephæna*, p. 199.
 - b¹. Rump and upper tail-coverts with whitish shaft marks like the rest of the upper surface.

- a².* Throat white, more or less spotted with black ; primaries uniform brown on the inner web *F. africanus*, p. 201.
- b².* Throat white or whitish surrounded by a line of mottled black and white feathers.
- a³.* Black and white superciliary stripes coalescing on the nape of the neck ; primaries chiefly rufous *F. levaillanti*, p. 208.
- b³.* Black and white superciliary stripes not meeting on the nape, but curving round towards the throat.
- a⁴.* Lower breast and belly rich buff, streaked and mottled with chestnut black and white *F. gariepensis*, p. 205.
- b⁴.* Lower breast and belly pale buff, almost immaculate *F. jugularis*, p. 207.
- c⁴.* Lower breast and belly whitish with more or less distinct V-shaped bars ... *F. shelleyi*, p. 208.
- B.* No white or other marked shaft stripes on the back.
 - a.* Beneath narrowly transversely barred with black and white *F. adspersus*, p. 209.
 - b.* Striped or mottled, not barred beneath.
 - a¹.* Back and scapulars blackish-brown, the feathers margined and vermiculated with white *F. capensis*, p. 210.
 - b¹.* Back and scapulars olive-brown, finely vermiculated with black *F. natalensis*, p. 212.

647. *Francolinus coqui. Coqui.*

Perdix coqui, Smith, Rep. Exped. C. Afr. p. 55 (1836).

Francolinus subtorquatus, Smith, Ill. Zool. S. Afr. Aves, pl. 15 (1838) ; *Gurney, Ibis*, 1860, p. 215 [Natal] ; *id. P. Z. S.* 1864, pp. 3, 6 [Okavango River] ; *Layard, B. S. Afr.* p. 273 (1867) ; *Gurney, Ibis*, 1868, p. 467 [Limpopo] ; *Buckley, Ibis*, 1874, p. 386 ; *Shelley, Ibis*, 1875, p. 85 ; *Ayres, Ibis*, 1880, p. 110 ; *Shelley, Ibis*, 1882, p. 361, [Bulawayo] ; *Sharpe ed. Layard's B. S. Afr.* p. 600 (1884) ; *Ayres, Ibis*, 1884, p. 232 ; *W. Ayres, Ibis*, 1887, p. 61 ; *Nicolls & Eglington, Sportsm. S. Afr.* p. 103 (1892) ; *Bryden, Gun and Camera*, pp. 282, 471 (1893) ; *Rendall, Ibis*, 1896, p. 175.

Scleroptera subtorquata, Gurney, in Andersson's *B. Damaraland*, p. 246 (1872).

Francolinus schlegeli (*nec Heugl.*), Sharpe ed. *Layard's B. S. Afr.* p. 602 (1884).

Francolinus coqui, Schaeck, Mem. Soc. Zool. Fr. iv, p. 349 (1891) ; *Grant, Cat. B. M.* xxii, p. 143 (1893) ; *id. Game Bds.* i, p. 111 (1896) ;

Shelley, B. Afr. i., p. 180 (1896); *Woodward Bros. Natal Bds.* p. 160 (1899); *Marshall, Ibis*, 1900, p. 262; *Reichenow, Vög. Afr. i.*, p. 492 (1901).

"Iswempe" of Zulus (Woodward).

Description.—*Adult Male*.—Crown of the head and a stripe from behind the eye to the upper ear-coverts reddish-chestnut; sides of the face and neck all round ochre-yellow, paling into white on the chin; rest of the upper surface grey and pale chestnut, most of the feathers with conspicuous shaft stripes of yellow-buff; primaries and secondaries slaty-black, the latter banded on the inner webs with chestnut; tail chestnut and black; below, including the sides of the breast, white, shading on the under tail-coverts to pale buff with transverse bands of black, which gradually disappear on the abdomen and under tail-coverts; a single moderate spur.

Iris light hazel-brown; bill ashy-horn, yellow at the gape; tarsi and feet bright yellow.

Length 11·0; wing 5·4; tail 2·7; culmen ·80; tarsus 1·4.

The female has a black superciliary line running above the eyes and ear-coverts, which nearly joins a second one; this commencing on the lores and running below the eye, passes down the neck and then across to join its fellow, circumscribing the white throat; the back is much more chestnut than in the male; the breast is reddish-chestnut with very narrow yellow shaft lines: as a rule the tarsus bears no spurs.

Distribution.—The Coqui was first discovered and described by Sir Andrew Smith from the neighbourhood of Kurrichane, in the present Rustenburg district of the Transvaal; it is found throughout that Colony (especially in the bushveld), Bechuanaland, Rhodesia and Natal, extending to the Okavango River and southern Angola in one direction, and through Nyasaland, and German and British East Africa, as far as Mombasa in the other.

The following are recorded localities: Natal—near Durban (Shelley and Millar), Howick (Woodward); Transvaal—Potchefstroom and Rustenburg (Ayres), Barberton (Rendall), Zoutspansberg (S. A. Mus.); Bechuanaland—Kanye (Exton, in S. A. Mus.), Bamangwato (Buckley), Ngamiland (Bryden); Rhodesia—Buluwayo (Ayres), Zambesi (Bradshaw), near Salisbury (Marshall).

Habits.—This, the smallest and perhaps the handsomest of the South African Francolins, is usually found in small coveys of from 6 to 12 individuals; it frequents open bush country where the grass is fairly short and the ground is dotted with scrub, and is seldom far

from water. It has a shrill call-note, somewhat resembling its name, heard usually in the early morning and evening, and likened by most observers to that of the English partridge. It roosts on the ground, and several usually nestle together for warmth, but it will occasionally resort to trees when disturbed. Its food consists of seeds, berries and insects, such as beetles, coccidæ and ants. It affords good sport, but sits very close, and can only be flushed with a good dog. Three eggs of this species, now in the South African Museum, were sent by Mr. Eriksson from Mataeko on the Omaramba River about 150 miles from its junction with the Okavango in Ondonga ; the nest was under a bush in a small cavity. The eggs are a very pale greenish white, somewhat conical in shape, and the shell is exceedingly thick and hard ; they measure 1·5 × 1·2. The flesh is excellent eating.

Mr. Millar writes "These birds are plentiful throughout Natal, although more partial to the coast lands ; they are resident all the year round. Old mealie fields and Kaffir gardens are their favourite haunts, the coveys consisting of three or four brace ; they seldom settle in trees, although they occasionally run into cover. The cock bird calls frequently during the day, uttering a loud, defiant note, and is said to be very pugnacious, its spurs being long and pointed. These birds nest in the open grass. The last clutch coming under my observation consisted of five eggs, creamy white in colour, and almost round in shape, and measuring 1·25 × 1·0. They were slightly incubated when found on March 10."

648. *Francolinus sephæna*. *Crested Francolin*.

Perdix sephæna, Smith, *Rep. Exped. C. Afr.* p. 55 (1836).

Francolinus pileatus, Smith, *Ill. Zool. S. Afr. Aves*, pl. 14 (1838) ;
Layard, *B. S. Afr.* p. 272 (1867) ; *Ayres*, *Ibis*, 1869, p. 297 ; *Finsch* & *Hartlaub*, *Vög. Ost-Afr.* p. 586 (1870) ; *Ayres*, *Ibis*, 1873, p. 282 ;
Buckley, *Ibis*, 1874, p. 386 ; *Oates*, *Matabeleland*, p. 323 (1881) ;
Holub & *Pelz. Orn. Süd-Afr.* p. 186 (1882) ; *Shelley*, *Ibis*, 1882, p. 360 ; *Sharpe*, ed. *Layard's B. S. Afr.* p. 593 (1884) ; *Ayres*, *Ibis*, 1886, p. 292 ; *W. Ayres*, *Ibis*, 1887, p. 61 [Lehtaba River] ; *Schaeck*, *Mem. Soc. Zool. Fr.* iv, p. 355 (1891) ; *Nicolls and Eglington, Sportsm. S. Afr.* p. 103 (1892) ; *Bryden, Gun and Camera*, p. 473 (1893).
Francolinus sephæna, *Newton*, *Ibis*, 1868, p. 269 ; *Grant, Cat. B. M. xxii*, p. 146 (1893) ; *id. Game Birds*, i, p. 113 (1896) ; *Shelley, B. Afr. i*, p. 180 (1896) ; *Alexander, Ibis*, 1900, p. 446 ; *Woodward Bros. Ibis*, 1900, p. 518 ; *Reichenow, Vög. Afr. i*, p. 495 (1901).

Scleroptera pileata, *Gurney*, in *Andersson's B. Damara*. p. 247 (1872).

"Inkwali" of the Zulus (Millar).

Description.—*Male*.—Crown of the head dark olive-brown, bounded on each side by a band of white, running back from behind the eye; centre of the back and wing-coverts rich chestnut with conspicuous white shaft stripes; quills dark brown with paler outer webs; rump and upper tail-coverts dark olive-brown; central tail-feathers brown, lateral ones almost black, dark chestnut towards the base; chin and throat white, cheeks spotted with pale rufous; under parts pale buff, the feathers of the lower parts of the throat and upper breast with dark chestnut wedge-shaped shaft spots, those of the lower breast and flanks finely pencilled with pale brown.

Iris hazel; bill dark brown; legs red, a sharp and stout spur on the tarsus.

Length 12·25; wing 6·4; tail 3·55; culmen 1·9; tarsus 1·9.

The female differs from the male in having no spurs and in the centre of the back, wing and tail-coverts being finely barred and vermiculated with brown and black. Young males resemble the females, but are provided with spurs.

Distribution.—The Crested Francolin, like the Coqui, was also first discovered by Sir Andrew Smith, in very much the same country, *i.e.*, the Marico and Rustenburg districts of the Transvaal. It is spread over Bechuanaland, as far as the Zambesi and Southern Angola in one direction, and in the other as far as Zululand and Southern Mozambique. In East Africa it is replaced by other closely allied species.

The following are localities: Zululand—Dukuduku bush (Woodward); Transvaal—Marico and Limpopo Rivers (Smith, Ayres and Oates), Lehtaba River in Zoutspansberg (W. Ayres); Bechuanaland—Kanye (Exton in S. A. Mus.), Macloutse River (Oates), Gokwe River (Ayres); German South-west Africa—Okamabute (Andersson); Portuguese East Africa—Metacania and Mesangue on the Zambesi (Alexander), Inhambane (Peters).

Habits.—The Crested Francolin seems everywhere to be a somewhat scarce bird. It is shy and retiring, and is generally to be found in the dense undergrowth running along the banks of rivers; it usually occurs in small coveys and is difficult to flush; it takes refuge in trees, and there with crest erect and tail uplifted it gives vent to a harsh metallic "Chiraka." Like others of the genus, its

food consists of small bulbs, seeds, berries and insects, and its flesh is excellent eating. No observer has hitherto described the nest and eggs.

Mr. Millar met with these birds plentifully in Zululand on the White Umvolosi River, near its junction with the Black Umvolosi; he found them shy, and so much addicted to close cover that they were difficult to procure.

649. **Francolinus africanus.** *Grey-wing or Cape Partridge.*

Perdix afra, (nec *Miill.*), *Lath. Ind. Orn.* ii. p. 648 (1790).

Francolinus africanus, *Steph. in Shaw's Genl. Zool.* xi, p. 323 (1819); *Grant, Ibis*, 1892, p. 48; *id. Cat. B. M.* xxii, p. 152 (1893); *id. Game Birds*, i, p. 117 (1895); *Shelley, B. Afr.* i, p. 181 (1896); *Woodward Bros. Natal Birds*, p. 162 (1899); *Oates, Cat. B. Eggs*, i, p. 38 (1901).

Francolinus afer, *P. L. Sclater, P. Z. S.* 1866, p. 23 [Cathcart division]; *Layard, B. S. Afr.* p. 270 (1867); *Shelley, Ibis*, 1875, p. 84; *Barratt, Ibis*, 1876, p. 208; *Oates, Matabeleland*, p. 323 (1881); *Holub & Pelz. Orn. Süd-Afr.* p. 188 (1882); *Sharpe, ed. Layard's B. S. Afr.* p. 595 (1884); *Bryden, Kloof and Karoo*, p. 312 (1889); *Schaec'*, *Mem. Soc. Zool. Fr.* iv, p. 351 (1891); *Nicolls and Eglington, Sportsm. S. Afr.* p. 101 (1892); *Reichenow, Vög. Afr.* i, p. 485 (1901); *Sharpe, Ibis*, 1904, p. 3 [Deelfontein].

“Patrijs” or “Berg Patrijs” of the Dutch; “Intendele” or “Isikwatsha” of the Amaxosa (Stanford) also applied to the Redwing; “Khuale” of Basutos (Murray).

Description. *Male.*—Crown and nape black, varied with pale rufous edgings to most of the feathers; sides of the neck barred with black and white, with a patch of rufous in between it and the base of the nape; rest of the upper surface greyish-brown clouded here and there with darker brown, and with narrow bars of pale chestnut-brown and longitudinal shaft streaks of pale buff; primaries uniform brown on the inner web, slightly mottled with rufous on the outer; chin and throat white, barred with black, especially at the sides and below; a narrow line of rufous running from the lores below the eye, through the ear-coverts along the side of the neck, separate this from the black and white patches at the side of the neck; upper breast pale rufous with dark rich chestnut spots plentifully disposed, especially along the sides of the breast and flanks; lower breast white and dark chestnut, the former chiefly in spots, the latter chiefly in rings, giving an ocellated appearance to this

part; thighs and under tail-coverts barred with buffy white and black.

Iris light brown; bill brown; legs and feet yellowish-brown; a short, stout tarsal spur.

Length 14·0; wing 6·0; tail 2·60; culmen 1·05; tarsus 1·6.

The female differs only in having no spurs; wing 5·75; tarsus 1·5.

The young birds have white throats and paler lower mandibles.

Distribution.—The Grey-winged Francolin is found throughout the greater part of Cape Colony, the Orange River Colony, the southern parts of the Transvaal and the upper and more elevated portions of Natal.

The following are recorded localities; Cape Colony—Cape, Stellenbosch, Caledon, Paarl and Hanover divisions (S. A. Mus.), Beaufort West (Layard), Deelfontein in Richmond (Sloggett), Port Elizabeth (Rickard), Grahamstown, Dordrecht (Trevelyan), Cathcart (Boulger); Natal—Spurs of Drakensberg. (Millar and Woodward); Transvaal—near Standerton (Oates), Lydenburg and Potchefstroom (Barratt).

Habits.—The Cape Partridge is usually found on open stony ground at low elevations in maritime districts, but in the interior chiefly about the mountain sides. It is generally in coveys of from 12 to 16 birds, and when flushed rises quickly and flies off strongly, but rarely goes far. It feeds early and late, digging up bulbs and roots with its powerful bill, and also devouring insects. It sometimes ravages freshly sown mealie and corn fields. During the middle of the day it usually rests in sheltered places.

The nest, a loose structure of grass roots, sometimes lined with feathers, is placed on the ground in a depression usually under the shelter of bushes or among high stuff. The eggs, from 6 to 8, or even 12 in number, are greenish or dark brown minutely spotted with brown pin-points and measure from 1·60 to 1·55 × 1·2 to 1·15.

Mr. Millar states that in Natal this bird is known as the Berg Grey-wing from the fact of its being found only in the vicinity of the Drakensberg; when flushed they are usually on the brow of the hill, and all rising together with a shrill, squeaky alarm, dive quickly round the corner, and are out of sight before a shot can be fired; if, however, they can be marked down they will rise singly and then afford good sport.

650. *Francolinus levaillanti*. *Cape Redwing.*

Perdix levaillanti, *Valenc. Dict. Sci. Nat.* xxxviii, p. 441 (1825).

Perdix levaillantoides, *Smith, Rep. Exped. Centr. Afr.* p. 55 (1836).

Francolinus levaillanti, *Smith, Illus. Zool. S. Afr. Aves*, pl. 85 (1843); *Gurney, Ibis*, 1864, p. 354, 1865, p. 274 [Natal]; *Layard, B. S. Afr.* p. 270 (1867); *id. Ibis*, 1869, p. 375; *Butler, Feilden and Reid, Zool.* 1882, p. 338; *Sharpe, ed. Layard's B. S. Afr.* p. 596 (1884); *Bryden, Kloof and Karoo* p. 313 (1889); *Grant, Ibis*, 1890, p. 347, 1892, p. 45; *Schaeck, Mem. Soc. Zool. Fr.* iv, p. 338 (1891); *Distant, Transvaal*, p. 75 (1892); *Nicolls & Eglington, Sportsm. S. Afr.* p. 100 (1892); *Grant, Cat. B. M.* xxii, p. 154 (1893); *id. Game Bds.* i, p. 119 (1896); *Shelley, B. Afr.* i, p. 181 (1896); *Woodward Bros., Natal Birds*, p. 161 (1899); *Reichenow, Vög. Afr.* i, p. 484 (1901); *Whitehead, Ibis*, 1903, p. 235.

"Redwing" of the Colonists, "Hill Redwing" of Natal, "Itendele" of the Zulus (Millar).

Description. Adult Male.—Crown of the head dusky-brown, bounded on each side by a superciliary stripe of black and white feathers, which extend down on both sides and coalesce in the middle of the nape and run on to the mantle, separating the rufous neck patches; general colour of the upper surface brown and black with narrow transverse bars of pale rufous and longitudinal shaft stripes of a somewhat lighter shade; primaries, their coverts and secondaries light chestnut, slightly mottled with brown at the tips; space in front of the eye continued above it and the ear-coverts to a considerable patch on either side of the neck rusty-brown, below this is a narrow line of black and white feathers running from the lores below the eye, through the ear-coverts and down the neck to the upper breast, there forming a considerable patch of white feathers edged and tipped with black; centre portion of the chin and throat white, surrounding portion pale rusty; rest of the lower surface pale buff, the feathers of the breast edged with chestnut; those of the flanks and under tail-coverts barred with very dark brown.

Iris hazel; bill dusky yellow at the base; legs dull yellow; spurs present or absent, but generally small.

Length 13·0; wing 6·55; tail 3·0; tarsus 1·7; culmen 1·1.

The sexes are alike, but the female is usually without spurs.

Distribution.—The Cape Redwing is not found north of the Limpopo, and seems to be most abundant in Cape Colony. Even here it is somewhat local, being chiefly confined to the southern districts, and it does not appear to reach the more westerly or north-western

portions of the Colony. It has not been obtained, so far as I am aware, in the neighbourhood of Cape Town or to the northwards.

The following are recorded localities: Cape Colony—Swellendam (Layard), Riversdale and Mossel Bay (Atmore), Port Eliza-



FIG. 64.—Nest and eggs with female of the Cape Redwing, from a photograph taken by Mr. R. H. Ivy near Grahamstown.

beth and East London (Rickard), Willowmore (Bryden) and King William's Town (Trevelyan and Pym), Orange River near Aliwal North, common (Whitehead); Natal—plentiful in the upper dis-

tricts (Ayres), Newcastle (Reid); Orange River Colony—Kroonstad (Brit. Mus.); Transvaal—Vaal River near Potchefstroom (Brit. Mus.), Pretoria (Distant), near Barberton (Gilfillan).

Habits.—The Cape Redwing is a somewhat locally distributed bird, being plentiful in some districts and entirely absent in others; it is usually met with in small coveys of from five to eight individuals, generally in secluded valleys, where there is plenty of long grass and rushes; Layard particularly mentions its preference for the thick palmiet beds, which are so often found along the rivers of the southern part of the Colony; everyone remarks that it lies very close and requires a very good dog to flush it, and that after this has been done once it is almost impossible to make it rise again, so much so that if carefully marked down it can almost be caught in the hand. Its flight is rapid and strong. The call-note, heard morning and evening, is loud and harsh, and its food consists chiefly of small bulbous roots.

The nest is usually well hidden in a depression in the ground among long grass, generally not far from water; the eggs, five to eight in number, vary somewhat, but are usually a dark tawny, spotted throughout with dark brown. Whitehead found a fresh egg in December, and young birds a few weeks' old in June, so that they appear to breed most of the year.

In Natal Mr. Millar states that the Redwing is found on the higher levels from about ten miles inland from the coast. The coveys consist of two or three brace, and the birds sit very close until flushed, when they fly to a considerable distance. Their call-note, though resembling that of *F. shelleyi*, is not so distinct, and can be readily distinguished.

Mr. Wood tells me that this Francolin is found in fair numbers about East London, though at times, when there is much dry weather about the breeding season, they become rather scarce. They are particularly fond of the bulbs of *Gladiolus* and *Watsonia*, and are generally to be found where these are growing in any numbers. They nest in the long grass, in the vicinity of water and lay from eight to ten eggs, pairing in early August.

651. *Francolinus gariepensis*. *Orange River Francolin.*

Francolinus gariepensis, Smith, Ill. Zool. S. Afr. Aves, pls. 83, 84 (1848); Layard, B. S. Afr. p. 272 (1867); Ayres, Ibis, 1873, p. 282; Sharpe, ed. Layard's B. S. Afr. p. 599 (1884), [in part]; Ayres, Ibis, 1886, p. 292; Schaeck, Mem. Soc. Zool. Fr. iv, p. 340 (1891); Grant, Ibis, 1890, p. 347, 1892, p. 45; id. Cat. B. M. xxii, p. 155

(1893); *id. Game Bds.* i, p. 120 (1896); *Nicolls & Eglington, Sportsm. S. Afr.* p. 101 (1892); *Bryden, Gun and Camera*, pp. 99, 468 (1893); *Shelley, B. Afr.* i, p. 181 (1896); *Reichenow, Vög. Afr.* i, p. 488 (1901).

Francolinus levaillanti (*nec Valenc.*), *Ayres, Ibis*, 1871, p. 261.

"Redwing" of Colonists, applied to this species as well as to *F. levaillanti*.

Description.—*Male*.—Crown of head dark brown edged with rufous-brown; round the hind neck a somewhat vaguely defined collar of pale rufous; rest of the upper parts ashy-brown, suffused in the middle of the back with a richer brown; all the feathers with longitudinal shaft stripes and transverse bands of pale rufous; primaries, primary coverts and secondaries brown, mottled with chestnut; two narrow bands of black and white mottled feathers starting in front of the eye run above and below; the lower one of the two meets its fellow in the middle line, enclosing the white chin and throat, the other ends in a patch of the same colour on each side of the base of the neck; ear-coverts and space between the two bands pale rufous; below pale buff throughout, feathers of the breast and flanks heavily blotched with dark rich chestnut, and some of those of the upper breast margined with black as well; under tail-coverts and sometimes the lower flanks banded with black.

Iris hazel, bill dark horn, nearly black, legs dull yellowish-brown. A sharp tarsal spur.

Length about 13·0; wing 6·5; tail 3·0; culmen 1·0; tarsus 1·6.

The female only differs from the male in being unprovided with spurs, though sometimes possessing a blunt knob in their place.

Distribution.—The Orange River Francolin was first obtained by Sir A. Smith, at the head waters of the Caledon River, in what is now Basutoland; it has not been found south of the Orange River; northwards it occurs through Griqualand West, Bechuanaland, Orange River Colony and the Southern Transvaal, its place being taken by other closely allied species to the westwards and eastwards.

The following are recorded localities: Cape Colony—Griqualand West (S. A. Mus.), Maritzani River near Mafeking (Bryden); Orange River Colony—Basutoland (Smith), Vredefort Road (B. Hamilton); Transvaal—Potchefstroom and Limpopo River (Ayres), Christiana (B. Hamilton).

Habits.—This Francolin is usually found on grassy slopes and among low kopjes not far from river courses, it has a long and shrill

cry generally heard in early morning and about sundown ; it lies well, but does not appear to be difficult to flush ; it is a strong flyer and is very good eating.

Ayres found it nesting in rough grass in a dry place not far from water ; the eggs are dark tawny spotted with brown ; they are somewhat abruptly pointed at the short end and measure 1·43 × 1·06.

652. *Francolinus jugularis*. Büttikofer's Francolin.

Francolinus gariepensis (*nec Smith*), *Strickl. and Scl. Contrib. Ornith.* 1852, p. 157 ; *Fleck, Journ. Ornith.* 1894, pp. 378, 391.

Scleroptera gariepensis, *Gurney*, in *Andersson's B. Damara*, p. 245 (1872).

Francolinus jugularis, *Büttikofer, Notes Leyd. Mus.* xi, pp. 76, 77, pl. 4 (1889) ; *Schaeck, Mem. Soc. Zool. Fr.* iv, p. 342 (1891) ; *Grant, Ibis*, 1890, p. 348, 1892, p. 45 ; *id. Cat. B. M.* xxii, p. 156 (1893) ; *id. Game Bds.* i, p. 121 (1896) ; *Shelley, B. Afr.* i, p. 181 (1896) ; *Reichenow, Vög. Afr.* i, p. 489 (1901).

Description.—Closely resembling *F. gariepensis*, but rather paler both above and below and with the chestnut spots on the breast hardly developed except on the upper chest and flanks, where they are much smaller and less conspicuous.

Length 13·0; wing 6·9; tail 3·20; tarsus 1·45; culmen 1·1.

Distribution.—This bird takes the place of the Orange River Francolin in the extreme western portion of our area, being found throughout German South-west Africa and Southern Angola. It was obtained at Reheboth in Gt. Namaqualand by Andersson, and at Mutschumi in the Kalahari by Fleck.

Habits.—Andersson gives the following account : “ I only met with this beautiful Francolin on the high tablelands of Damara and Great Namaqualand, but there it is frequently very abundant in coveys usually of six or eight individuals, though sometimes as few as three birds, and at others as many as fourteen compose the covey.

“ These Francolins invariably frequent grassy slopes sprinkled with dwarf bush ; they lie very close, and after having been once or twice flushed, are not easily found again, even with the assistance of dogs. They feed on bulbs, grass, berries and seeds, and their flesh is very good for the table.”

Fleck, who gives us a somewhat similar account, states that it

has a loud cry, heard in early morning and shortly after sundown, as follows: "O-ti-pidlib, O-ti-pidlid, O-ti-pidlib."

653. *Francolinus shelleyi*. Shelley's Francolin.

Francolinus garieensis (nec Smith) Shelley, Ibis, 1882, p. 361 [Umfuli River]; Butler, Feilden, and Reid, Zool. 1882, p. 338.

Francolinus shelleyi, Grant, Ibis, 1890, p. 348, 1892, p. 45; id. Cat. B. M. xxii, p. 157, pl. 6 (1893); id. Game Birds, i, p. 121 (1896); Schaeck, Mem. Soc. Zool. Fr. iv, p. 347 (1891); Shelley, B. Afr. i, p. 181 (1896); Marshall, Ibis, 1900, p. 262; Reichenow, Vög. Afr. i, p. 490 (1901).

Francolinus levallanti, Woodward Bros. Natal B. p. 161 (1899).

"Thorn Red-wing" of Natalians; "Isendele" of the Zulus (Millar).

Description.—Much resembling *F. gariepensis* on the upper surface but rather darker and blacker; below the throat is white surrounded by the usual black line, usually with a patch of black and white feathers on the crop; the chest and flanks are chestnut, most of the feathers with paler inner webs barred with black; the centre of the breast is mottled black and white, the black in V-shaped markings, tending to form transverse bars; thighs, vent and under tail-coverts pale buff irregularly barred with darker.

Iris dark brown, bill grey, base of lower mandible yellow, legs yellow; a sharp tarsal spur,

Length about 12·0; wing 6·8; tail 3·10; tarsus 1·4; culmen 1·2.

The female is like the male, but has no spur, or only a blunt tubercle.

Distribution.—Shelley's Francolin replaces the Orange River Francolin on the eastern side of our region, extending from Natal to Mashonaland; north of the Zambesi it has been found in Nyasaland and German East Africa, as far north as Zanzibar.

The following are recorded localities: Natal—near Durban, June (Millar), near Colenso, November (Reid); Swaziland (Buckley); Rhodesia—Umfuli River, September, whence came the type (Ayres), Chiromwe on the Zambesi (Stoehr in S. A. Mus.); Portuguese East Africa—Inhambane (Peters).

Habits.—Mr. Millar informs me that this bird is generally distributed throughout Natal, frequenting the coast-lands as well as the "thorns" up country; like most other Francolins it calls at dawn and late at night with a clear and distinct whistle. The

covey consists as a rule of two or three brace; they nest in the grass or in the vicinity of some old field which they frequent; Mr. Millar found a nest on August 8, which contained five fresh eggs these were minutely spotted, and measured $1\cdot5 \times 1\cdot0$.

Mr. J. ffolliott Darling writes me that this Francolin is widely distributed in Mashonaland and is found in every sort of country, except near the vleys; it is probably most abundant in lightly wooded country; sometimes a covey will haunt a bare kopje without a bush on it or scarcely a blade of grass; there the birds would hide between the stones and rocks, and so close do they lie, even when a dog points to them, that it is often possible to catch them in the hand; the Mashonas often follow them and, watching where they pitch, kill them with sticks. They are fond of digging up roots of grass in the dry season and become very fat in consequence; they also gorge themselves on locusts.

The nest is a slight structure of dry grass in a shallow depression, sometimes in the open, sometimes under the shelter of a small bush. Mr. Darling has found eggs in every month from June to November, and states that the clutches average four.

654. *Francolinus adspersus*. *Red-billed Francolin.*

Francolinus adspersus, Waterhouse, in Alexander's Exped. Int. Afr. ii, p. 267, with fig. (1838); Layard, B. S. Afr. p. 269 (1867); *id. Ibis*, 1869, p. 375; Sharpe, ed. Layard's B. S. Afr. p. 590 (1884); Schaeck, Mem. Soc. Zool. Fr. iv, p. 353 (1891); Grant, *Ibis*, 1892, p. 46; *id. Cat. B. M.* xxii, p. 159, pl. vii, (1893); *id. Game Birds*, i, p. 124 (1896); Nicolls and Eglington, *Sportsm. S. Afr.* p. 104 (1892); Bryden, *Gun and Camera*, pp. 282, 470 (1893); Fleck, *Journ. Ornith.* 1894, pp. 242-3, 391; Shelley B. Afr. i, p. 181 (1896); Reichenow, *Vög. Afr.* i, p. 474 (1901).

Scleroptera adspersa, Gurney, in Andersson's B. Damara. p. 247 (1872).

Description. Adult Male.—Whole of the upper surface, except the upper part of the mantle finely vermiculated, with brown and dirty white; primaries brown, not vermiculated; lores and feathers in front of the eye nearly black; whole of the lower surface, including the sides of the neck and mantle, very finely barred with brown and white.

Iris brown, bare skin round eye pale yellow, bill, legs and feet coral red; toes and spurs purple; tarsus with sharp spur in the male.

Length 13·0; wing 7·0; tail 3·5; culmen 1·07; tarsus 1·7.

Young birds have the mantle similar to the rest of the upper parts; some of the scapulars blotched with black at the extremities, and the under parts brownish white, finely vermiculated with black; the bill is dark purple and legs paler than in the adult.

Distribution.—The Red-billed Francolin was first obtained by Sir James Alexander in the early part of the last century in Great Namaqualand; it is spread all over German South-west Africa as far as southern Angola, and extends eastwards throughout the Northern Kalahari to the upper waters of the Limpopo and Marico Rivers in the North-west Transvaal.

The following are localities: Transvaal—Limpopo and Marico Rivers (Nicolls and Eglington); Bechuanaland—north of Molopo (Bryden), Notwani River (Nicolls and Eglington), Botletli River (Bryden); German South-west Africa—Great Fish River in Great Namaqualand (Alexander, type), Otjimbinque and Walvisch Bay (Andersson in Bt. and S. A. Mus.).

Habits.—This bird, which replaces the so-called Pheasant of the Colony in German South-west Africa and the Kalahari is found in coveys of from ten to fourteen individuals usually in very thick bush and never far from water; it is one of the most difficult of the Francolins to flush, and when this is done, it almost invariably takes refuge among the thickest branches of a tree or bush, where it remains motionless and concealed till the danger is past.

It is a very swift runner, and is not shy, being seen not infrequently among Native kraals picking up fallen grain.

It feeds early in the morning and late in the evening on seeds, berries and insects; its voice is a “succession of hysterical laughs, at first slow, but increasing in rapidity and strength till suddenly they cease.” The eggs are laid on the ground, in a slight hollow under the shelter of a bush. Fleck found one nest with ten, another with only four eggs; in the latter case incubation was almost completed. The eggs are stated by Layard to be rather peculiarly shaped, being truncated at both ends, and the shell being very thick, dense and heavy; the colour is a pale creamy white and the measurements $1\cdot 6 \times 1\cdot 1$.

655. *Francolinus capensis*. Noisy Francolin or Cape Pheasant.

Tetrao capensis, *Gmelin, Syst. Nat.* i, p. 759 (1788).

Perdix clamator, *Tennm. Pig. et Gall.* iii, pp. 298, 717 (1815).

Perdix capensis, *Burchell, Travels* i, p. 270 (1822); *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 52 (1858).

Franeolinus clamator, *Layard, B. S. Afr.* p. 268 (1867); *Sharpe, ed*

Layard's B. S. Afr. pp. 591, 854 (1884); *Bryden, Kloof and Karoo*, p. 308 (1889); *Nicolls and Eglington, Sportsm. S. Afr.* p. 105, fig. 42 (1892).

Francolinus capensis, *Shelley, Ibis*, 1875, pp. 62, 85; *Schaeck, Mem. Soc. Zool. Fr.* iv, p. 343 (1891); *Grant, Ibis*, 1892, p. 48; *id. Cat. B. M.* xxii, p. 165 (1893); *id. Game Birds* i, p. 129 (1896); *Shelley, B. Afr.* i, p. 181 (1896); *Reichenow, Vög. Afr.* i, p. 473 (1901); *Oates, Cat. B. Eggs B. M.* i, p. 89 (1901).

"Pheasant" of the English, "Fazant" of the Dutch Colonists.

Description. Adult Male.—Above very dark brown, almost black, the feathers of the crown slightly edged and tipped with lighter, those of the back and wings with V-shaped or narrow wavy bands



FIG. 65.—Head of *Francolinus capensis*. $\times \frac{1}{2}$

of ashy or pale rufous-white giving a scaly look to the upper surface ; feathers of the sides of the face and neck, chin and throat black edged with white ; feathers of the upper breast marked like those of the back ; lower breast and rest of the lower surface black with conspicuous white shaft marks and white edgings and mottlings to all the feathers.

Iris reddish-brown ; bill dark horn, lower mandible orange to yellow ; legs dark yellow ; tarsus usually with a pair of blunt spurs. Females as a rule without spurs, though in exceptional cases, probably very old birds, they are sometimes found.

Length (female) 16·5; wing 7·75; tail 3·75; tarsus 2·25; culmen 1·1; the male is a little larger, wing 8·0; tail 4·10.

Distribution.—This is the largest of the South African Francolins; it is found only within the Cape Colony, and chiefly in the southern and south-western portions of it.

The following are localities. Cape Colony—Cape division (Victorin), Stellenbosch, Worcester and Caledon (S. A. Mus.), Ceres and Tulbagh (L. Peringuey), Uitenhage (Bryden), Karee river in Sutherland (Burchell), Orange river (Bradshaw).

This Francolin is very abundant on Robben Island in Table Bay, where it was introduced many years ago.

Habits.—The Cape Pheasant is found chiefly in the maritime districts; it is especially abundant in bushy kloofs and along water courses, where there is a thick growth of rank vegetation and low underwood. It is common in the immediate vicinity of Cape Town. Like the Red-billed Francolin it is flushed with great difficulty, preferring to squat or to run when possible; it resorts to the lower branches of thick trees, and there remains concealed just beyond the reach of dogs; like other Francolins it feeds early and late on tender shoots, especially of green fern, as well as on grain and on insects. Its voice is a loud and drawn out chuckle, generally heard when disturbed and flying off to shelter.

The nest is placed on the ground, usually under a bush; eight to fourteen eggs are laid of a greenish-brown or brownish-cream colour; they measure 1·95 to 1·8 × 1·5 to 1·4, according to Oates.

656. *Francolinus natalensis*. *Natal Francolin*.

Francolinus natalensis, Smith, *S. Afr. Quart. Journ.* ii, p. 48 (1834); *id. Illus. Zool. S. Afr. Aves*, pl. 13 (1838); Gurney, *Ibis*, 1860, p. 214 [Natal]; Layard, *B. S. Afr.* p. 273 (1867); Gurney, *Ibis*, 1868, p. 467 [Transvaal]; Layard, *Ibis*, 1869, p. 375; Buckley, *Ibis*, 1874, p. 387; Drummond, *Large Game*, p. 414 (1875); Barratt, *Ibis*, 1876, p. 209; Ayres, *Ibis*, 1880, p. 110; Oates, *Matabeleland*, p. 323 (1881); Sharpe, *ed. Layard's B. S. Afr.* p. 592 (1884); Ayres, *Ibis*, 1886, p. 292; Schaeck, *Mém. Soc. Zool. Fr.* iv, p. 345 (1891); Nicolls and Eglington, *Sportsm. S. Afr.* p. 105, pl. xi, fig. 53 (1892); Bryden, *Gun and Camera*, p. 473 (1893); Grant, *Ibis*, 1892, p. 49; *id. Cat. B. M.* xxii, p. 166 (1893); *id. Game Birds* i, p. 130 (1896); Shelley, *B. Afr.* i, p. 181 (1896); Woodward Bros., *Natal B.* p. 162 (1899); Alexander, *Ibis*, 1900, p. 446; Reichenow, *Vög. Afr.* i, p. 475 (1901).

Perdix lechoho, *Smith, Rep. Exped. C. Afr.* p. 54 (1836).

"Coast Partridge" of Natal; "Namaqua Pheasant" of Transvaal Boers; "Insekvehle" of Zulus; "Lesogo" (*i.e.*, Lesoho) of Bechuanas.

Description.—*Adult.*—Crown sepia-brown, sides and nape of the neck darker brown with whitish edgings to the feathers; rest of the upper surface pale brown, vermiculated with darker, most of the feathers of the mantle and wings with reddish-brown shafts and conspicuous dark brown shaft-marks, primaries brown not mottled; ear-coverts buffy-brown, sides of the face and neck, chin and throat white spotted with black; rest of the lower surface white, barred and mottled with black, varying in arrangement from transverse to V-shaped bars in different individuals.

Iris dark hazel; bill and legs coral-red; male with one or two tarsal spurs; if the latter the second pair blunt; females usually without spurs.

Length 13·5; wing 6·75; tail 3·5; tarsus 1·9; culmen 1·05. The female is smaller, wing 6·3.

Distribution.—The Natal Francolin takes the place of the Cape Pheasant in the Eastern portion of our area, being found in Natal, Swaziland, the Transvaal and Bechuanaland, and extending probably to Rhodesia, though not yet definitely recorded thence; it has been met with, however, on the Zambezi by Alexander.

The following are recorded localities: Natal—near Durban (Smith, type, and Ayres); Transvaal—Swaziland (Bt. Mus.), Limpopo and Marico river (Smith and Ayres), Rustenburg (Ayres); Bechuanaland—Mahura's country (Arnot), Makalapsi rivcr in Bamangwato (Oates); Portuguese East Africa—Matacania on the Zambezi (Alexander).

Habits.—Like the Cape Pheasant and the Red-billed Francolin, this is essentially a bush-loving bird, being found only where there is dense underwood, as along the courses of rivers or in Natal along the sea coast. It is a good runner and shy and difficult to obtain; at night it roosts in the trees, while, if flushed, its flight is straight and strong. It feeds at sunrise and sunset on seeds and insects, and is often seen in the neighbourhood of native kraals, where it resorts to obtain Kaffir corn. The Woodwards state that its call is a pleasing one; Ayres likens it to that of the Guinea fowl.

Two eggs sent to Mr. Layard from Mahura's Country by Mr. Arnot and now in the South African Museum are somewhat rounded very pale brown and immaculate, and measure 1·68 × 1·4.

Mr. Millar sends me the following note on this bird: "The Natal Pheasant is very common and plentiful along the coast; it frequents bush-land, cane-fields and deserted ground; the coveys usually consist of two or three brace, and when flushed nearly always make for the bush, settling on trees and brambles and waiting until the danger has passed, when they call to one another and again congregate. The note is loud and harsh, several of the covey often joining in the chorus. They nest on the ground, laying a creamy white egg measuring 1·75 x 1·25; a nest found on the 20th June near Durban contained three fresh eggs."

Genus II. PTERNISTES.

Type.

Pternistis, Wagler, *Isis*, 1832, p. 1229 *P. nudicollis*.

This genus resembles *Francolinus* except for the fact that the throat is completely bare of feathers, and frequently brightly coloured.

Nine species, all confined to Africa, are recognised by Grant; of these, three are South African.

Key of the Species.

- A. Feathers surrounding the bare throat not white nor contrasting with their neighbours.
 - a. Feathers of the breast and belly with white centres and black or rufous edges..... *P. nudicollis*, p. 214.
 - b. Feathers of the breast and belly brown, with darker brown centres, and in some cases rufous-brown edgings *P. swainsoni*, p. 217.
- B. Feathers surrounding the bare throat pure white, forming a marked ring..... *P. humboldti*, p. 216.

657. **Pternistes nudicollis.** *Red-necked Francolin.*

Tetrao nudicollis, Bodd. *Tabl. Pl. Enl.* p. 11 (1783).

Perdix nudicollis, Grill, *K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 52. (1858) [Knysna].

Francolinus nudicollis, Layard, *B. S. Afr.* p. 268 (1867); *id. Ibis*, 1869, p. 375; Barratt, *Ibis*, 1876, p. 209; Holub & Pelzeln, *Orn. Süd-Afr.* p. 187 (1882); Bryden, *Kloof and Karoo* p. 311 (1889); Schaeck, *Mem. Soc. Zool. Fr.* iv, p. 314 (1891).

Pternistes nudicollis, Sharpe, *ed. Layard's B. S. Afr.* p. 589 (1884);

· Nicolls and Eglington, *Sportsm. S. Afr.* p. 104 (1882); Grant, *Ibis*, 1892, p. 53; *id. Cat. B. M.* xxii, p. 174 (1893); *id. Game Bds.* i, p. 136 (1896); Shelley, *B. Afr.* i, p. 179 (1896); Woodward Bros., *Natal B.* p. 163 (1899); Reichenow, *Vög. Afr.* i, p. 461 (1901); Oates, *Cat. B. Eggs*, i, p. 40 (1901).

“Pheasant” at Knysna, in other parts of the country generally known as the “Red-necked Pheasant.”

Description. *Adult Male.*—General colour above, brown, on the nape with white edgings to some of the feathers, those of the mantle, wings and rest of the upper surface with strongly marked dark brown centres; wing-quills brown; sides of the face including a line over the eye and forehead black; upper breast ashy with black centres to the feathers; lower breast and flanks black and white; the black along the shaft and edges, the white in two narrow bands on both sides of the shaft; abdomen and under tail-coverts brown, with darker shaft-marks like the back.

Iris brown, bare skin round the eye and on the throat bright crimson; bill and legs orange-red, a pair of sharp, strong tarsal spurs. Length 15; wing 8·25; tail 3·45; culmen 1·3; tarsus 2·45.

In the female the feathers on the nape and sides of the neck are more strongly edged with white; the bird is smaller and has no spurs. Length 13; wing 7·5.

In a young male in the South African Museum, the feathers of the lower breast and flanks are broadly edged with rich dark chestnut.

Distribution.—This bird is found only along the south coast of the Colony in the more thickly wooded districts from Swellendam to Natal. It has been recorded from Lydenburg, in the Transvaal, but probably in error.

The following are recorded localities: Cape Colony—Swellendam and George (Layard), Knysna (Victorin), Willowmore (Bryden), Albany (S. A. Mus.), Port Elizabeth (Rickard), East London (Wood), King William’s Town (Trevelyan and Pym); Natal—Up-country districts (Woodward), Dargle, June (Millar); Transvaal—Lydenburg (Barratt).

Habits.—Little of any special interest is recorded about the habits of this bird; it is found only in forest or thick bush, and is seldom far from water; it has a loud, cackling note, heard at early morn and in the evening; when flushed it usually takes refuge in a tree and conceals itself effectually. It is generally met with in coveys of from six to twelve birds, these being a family party which only breaks up at the commencement of the following breeding season.

The nest is placed in long grass usually at the foot of a bush or tree; six to eight eggs form the clutch; these are reddish-buff minutely spotted with dark reddish-brown or purple, and measure $1\cdot55 \times 1\cdot15$ according to Oates.

Mr. Millar sends me the following note: "These birds apparently confine themselves to the upper districts of Natal, where they associate in pairs or small coveys, frequenting the Yellow-wood forests in the vicinity of Karkloof, Dargle, and elsewhere; their loud harsh call is constantly heard during early morning and evening; they are usually found about the outskirts of the bush, but are not easily shot, as they seldom venture far from covert, where they immediately take refuge when disturbed, settling on trees or in thickets."

658. *Pternistes humboldti. Humboldt's Francolin.*

Francolinus humboldti, Peters, *Monatsb. Akad. Berlin*, 1854, p. 134 (Tete); *Finsch. & Hartl. Vög. Ost-Afr.* p. 581 (1870); *Schaeck, Mem. Soc. Zool. Fr.* iv, p. 318 (1891).

Pternistes humboldti, Sharpe, ed. *Layard's B. S. Afr.* p. 589 (1884); *Grant, Ibis*, 1892, p. 53; *id. Cat. B. M.* xxii, p. 176 (1893); *id. Game Bds.* i, p. 136 (1896); *Shelley, B. Afr.* i, p. 179 (1896); *W. L. Sclater, Ibis*, 1899, p. 112 [Inhambane]; *Reichenow, Vög. Afr.* i, p. 462 (1901).

Pternistes nudicollis (nec Bodd.) Marshall, Ibis, 1900, p. 262.
"Inkwari" at Inhambane (Peters).

Description. *Adult Male.*—Forehead, a narrow line above the eyes and a spot behind the ear-coverts white, separated from the brown crown by a few black spotted feathers; nape and upper mantle black with white edgings; rest of the upper surface brown with darker centres to the feathers, most conspicuous on the middle of the back; sides of the face, ear-coverts and a band surrounding the patch of bare skin on the throat, pure white; sides of the neck and a line running over the ear-coverts towards the eye, black; breast and sides of the body ashy-grey, with black centres to the feathers; lower breast black, with one or two white shaft marks at the sides; abdomen and under tail-coverts brown.

Iris dark hazel, bare skin round the eye and on the throat bright red, approaching vermillion; bill, legs and feet bright red with a fine lead-coloured pencil line along the junction of the scales of the tarsus, two pairs of tarsal spurs, the upper pair generally short and blunt.

Length (in the flesh) 16·75; wing 7·5; tail 3·0; culmen 1·4; tarsus 2·3.

The female resembles the male in most respects, but the lores are black and white; there is more white on the breast and belly, and there are no spurs; wing 7·0; tail 2·9; tarsus 2·2.

In the immature bird the cheeks and sides of the face are white with black shaft-stripes, and there is a good deal more white on the breast and abdomen.

Distribution.—This Francolin was first obtained by Dr. Peters at Tete, on the Zambesi; southward of this it is spread over Mashonaland and Portuguese East Africa, northward through Nyasaland and German and British East Africa as far as the river Tana.

The following are South African localities: Rhodesia—near Salisbury (Marshall), Mazoe (ffoliott Darling); Portuguese East Africa—Tete (Peters), Inhambane (Francis).

Habits.—Francis found this bird plentiful and common near Inhambane; he states that it frequents thick scrubby and inaccessible spots during the day, but is always to be found in the Kaffir gardens early in the morning and late in the evening. On perceiving anyone, it immediately runs off into the scrub or other thick stuff and generally rises behind trees or other obstructions, so that it is difficult to get a shot at it. Like other bush Francolins, on being suddenly flushed by a dog, it generally takes refuge in the branches of the nearest tree. It is very fond of scratching up the ground-nuts in the Kaffir gardens, and also grubs up the roots of the manioc plant. It is a bird of strong flight and is generally found in pairs, although often in larger parties, but never more than five or six individuals together.

Mr. ffoliott-Darling tells me that this species is plentiful along the banks of rivers and in marshes near Mazoe in Mashonaland; he also states that the nest is well concealed and more pretentious than that of most Francolins.

The eggs, according to Reichenow, are smooth, yellowish-white, covered somewhat sparsely with fine darker spots; they measure 1·65 × 1·40.

659. *Pternistes swainsoni*. *Swainson's Francolin.*

Perdix swainsoni, Smith, *Rep. Exped. Centr. Afr.* p. 54 (1836).

Francolinus swainsoni, Smith, *Ill. Zool. S. Afr. Aves.* pl. 12 (1838); Strickland and P. L. Sclater, *Contr. Ornith.* 1852, p. 157; Layard, *B. S. Afr.* p. 269 (1867); Ayres, *Ibis*, 1869, p. 297, 1877, p. 346, 1880, p. 109; Buckley, *Ibis*, 1874, p. 386; Barratt, *Ibis*, 1876, p. 209;

Shelley, *Ibis*, 1882, p. 360; *Schaeck*, *Mem. Soc. Zool. Fr.* iv, p. 327 (1891).

Pternistes swainsoni, *Gurney*, in *Andersson's B. Damara*. p. 244 (1872); *Sharpe*, ed. *Layard's B. S. Afr.* p. 587 (1884); *Ayres*, *Ibis*, 1886, p. 292; *Nicolls and Eglington*, *Sportsm. S. Afr.* p. 102 (1892); *Bryden*, *Gun and Camera*, p. 471 (1893); *Grant*, *Ibis*, 1892, p. 54; *id. Cat. B. M.* xxii, p. 179 (1893); *Fleck*, *Journ. Ornith.* 1894, p. 391; *Grant*, *Game Birds*, i, p. 139 (1896); *Shelley*, *B. Afr.* i, p. 179 (1896); *Marshall*, *Ibis*, 1900, pp. 262, 270; *Alexander*, *Ibis*, 1900, p. 445; *Reichenow*, *Vög. Afr.* i, p. 456 (1901).

Description. *Adult Male*.—General colour above umber-brown, most of the feathers centred and mottled with darker; primaries plain brown; feathers round the eye brown edged with grey; ear-

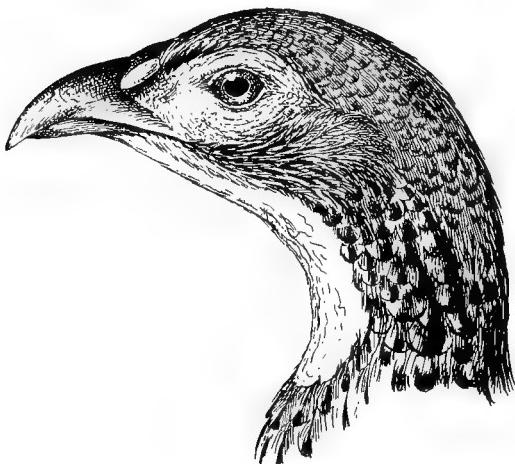


FIG. 66.—Head of *Pternistes swainsoni*. $\times \frac{1}{2}$

coverts grey; round the neck a somewhat ill-defined collar of mottled black and white feathers; below greyish-brown, with dark brown shaft-marks; the feathers on the abdomen and flanks mostly margined with rich chestnut.

Iris brown, bare skin round the eye and on the throat vermillion, the lower mandible also red, rather paler towards the tip, upper mandible brown, except the nasal operculum, which is red; legs and feet black, with a reddish tinge; tarsus with a strong and sharp spur, and usually a second rudimentary one higher up.

Length about 13·0; wing 7·25; tail 3·20; culmen 1·20; tarsus 2·25.

The female resembles the male, but is without the chestnut edgings to the feathers of the lower breast and flanks, and has no spurs on the tarsi; wing 6·9; tarsus 1·9.

Distribution.—Swainson's Francolin was first discovered by Smith along the rivers south of Kurichane, that is on the northern slopes of the Magaliesberg. It does not appear to extend its range much south of this point but to the northwards is common enough throughout the country up to the Zambesi.

The following are the chief recorded localities: Cape Colony—Maritzani River, near Mafeking (Bryden); Transvaal—Rustenburg and Waterberg (Ayres), Zoutspansberg and Sabi River in Lydenburg (S. A. Museum); Bechuanaland—Tati, Jan. (S. A. Mus.); Rhodesia—Inslungeen (*i.e.*, Shangani) and Quaequae (*i.e.*, Kwekwe), Rivers (Ayres), Lundi Nuanetzi and Shagari Rivers (Marshall), Zumbo (Alexander), Sinde River near Victoria Falls (S. A. Mus.); German South-west Africa—Omuveroom to Okavango (Andersson), Omaruru (Eriksson in S. A. Mus.), Matschawa, west of Ngami (Fleck).

Habits.—This bird very closely resembles the other Bush-Francolins in its habits; it is never found far from water and bush, it roosts in trees, and when feeding in the open and disturbed escapes by running, if possible, towards the shelter of brushwood. Its cry is frequent and harsh and is heard early in the morning and in the evening, at which time it also regularly descends to the watering-places to drink; its food consists of bulbs, seeds, berries and insects, while Alexander states that on the Upper Zambesi it does a good deal of damage among the Marpela grain fields of the natives. Ayres found a nest on June 4, on the Shangani River; it was placed in rough, high grass near the river in a slight cavity and was constructed of soft dry grass and feathers; the eggs, six in number and slightly incubated were a pinkish cream colour, finely speckled with chalky white, and measured about 1·6 × 1·4.

Alexander also found a nest on December 23; in this case, leaves were used to line the nest and the eggs were five in number, pale dirty green in colour and measured 1·5 × 1·2.

Genus III. COTURNIX.

Type.

- Coturnix**, Bonn., *Tabl. Encyl. Méth.* i, pp. lxxxvii,
216 (1790) *C. communis*.

Bill small, short and conical; head and throat fully feathered; wings long and pointed, the first primary being almost as long as the second, which is generally the longest; axillaries white; tarsus unfeathered; no spurs in either sex; tail very short and soft, covered by the upper tail-coverts, less than half the length of the wing and consisting of ten or twelve feathers.

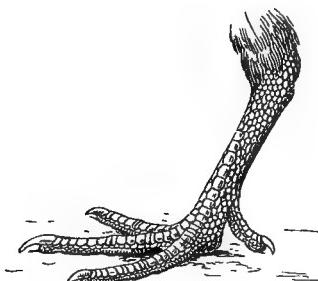


FIG. 67.—Left foot of *Coturnix africana*. $\times \frac{1}{4}$

About six species of this genus are generally recognised; they are spread all over the Old World, including Australia and New Zealand. Two species are found within our limits, one of which is generally regarded as merely a subspecies of the common European Quail.

Contrary to what is usual in this order, the Quails are migratory in habits.

Key of the Species.

- A. Outer web of primaries brown, mottled and barred with buff.
 - a. With a longitudinal black band on the throat *C. africana*, ♂, p. 221.
 - b. No black band on the throat *C. africana*, ♀, p. 221.
- B. Outer web of the primaries uniform brown.
 - a. Centre of breast and belly black *C. delagorguei*, ♂, p. 224.
 - b. Centre of breast and belly pale rufous slightly mottled with darker *C. delagorguei*, ♀, p. 224.

660. *Coturnix africana*. *Cape Quail*.

Coturnix vulgaris africana, Temm. & Schleg., *Fauna Jap.* p. 103 (1850).
Coturnix dactylionans (*nec Temm.*) Strickland and Sclater, *Contr.*

Ornith., 1852, p. 157; Ayres, *Ibis*, 1860, p. 216; Layard, *B. S. Afr.* p. 274 (1867); Ayres, *Ibis*, 1874, p. 103; Barratt, *Ibis*, 1876, p. 208; Gurney, *Ibis*, 1878, p. 410; Oates, *Matabeleland*, p. 324 (1881); Holub & Pelzeln, *Orn. Süd-Afr.* p. 188 (1882).

Coturnix communis (*nec Bonn.*), Gurney, *Ibis*, 1868, p. 467; *id. in Andersson's B. Damaral.*, p. 248 (1872); Ayres, *Ibis*, 1878, p. 298; Butler, Feilden and Reid, *Zool.*, 1882, p. 339; Symonds, *Ibis*, 1887, p. 333; Seeböhm, *Ibis*, 1887, p. 342-3; Nicolls and Eglington, *Sportsm. S. A.*, p. 106 (1892); Bryden, *Gun and Camera*, p. 474 (1898).

Coturnix capensis, Gray, *Handl. Bds.* ii, p. 268 (1870); Grant, *Ann. Mag. N. H.* (6) x, pp. 167-170 with fig. (1892); *id. Cat. B. M.* xxii, p. 237 (1893); *id. Game Bds.* i, p. 183 (1896); Shelley, *B. Afr.* i, p. 178 (1896); Woodward Bros., *Natal B.*, p. 164 (1899); Marshall, *Ibis*, 1900, p. 262; Sharpe, *Ibis*, 1904, p. 4 [Deelfontein].

Coturnix coturnix, Sharpe, *ed. Layard's B. S. Afr.* pp. 603, 854 (1884)
Fleck Journ. Ornith., 1894, p. 392; Rendall, *Ibis*, 1896, p. 175.

Coturnix coturnix africana, Reichenow, *Vög. Afr.* i, p. 506 (1901).

"Kwartel" of the Dutch, "Isagwity" of the Amaxosa (Stanford);
"Kue Kue" of Basutos (Murray).

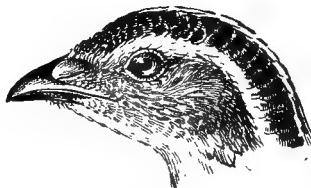


FIG. 68.—Head of *Coturnix africana*, ♀. × ½

Description. Adult Male. In the breeding season.—General colour above reddish brown varying to black, especially on the rump and scapulars, many of the feathers with V-shaped cross bars of yellowish and others with broad longitudinal shaft marks of almost white; these latter form a distinct white line along the centre of the head and neck; primaries, primary coverts and secondaries blackish-brown, mottled in the former case on the outer webs, in the latter on both webs with buff; lores and a stripe over the eye buffy-white; cheeks and sides of the throat rufous; a black patch commencing on the chin and widening out below on the throat; chest pale rufous with white shaft-marks passing to pure white on the

abdomen and under tail-coverts ; sides of the chest and flanks rich rufous with white and black shaft lines.

Iris light brown ; bill dark, almost black ; legs pale pinky yellow. Length 7·0; wing 3·85; tail 1·60; culmen ·40; tarsus 1·0.

The female has the throat pure white and unspotted ; the sides of the head and neck, the breast and the flanks are all white, profusely spotted with black and slightly tinged round the spots with pale chestnut.

Males in non-breeding plumage and young males differ from the breeding adults in having no black patch on the throat.

This bird differs from the European Quail (*Coturnix communis*) in having the lores, sides of the head, chin and throat rufous instead of white and in being slightly smaller (wing 3·70 to 3·90 against 4·2). It is only recently that Mr. Grant has separated the South African Quail as distinct from the European bird, which is found throughout the greater part of Europe and Asia, breeding towards the North and wintering in Africa and Southern Asia. Mr. Grant further believes that the European bird reaches our limits and occasionally interbreeds with our resident Cape subspecies. All the specimens which I have come across, however, from South Africa are undoubtedly referable to the red-cheeked *Coturnix africana*; moreover there are no specimens of the white-cheeked form from South Africa in the list of those preserved in the British Museum, though there are two stated to be intermediate between the subspecies from the Cape Colony and Natal respectively. This seems to point to the fact that the true European Quail does not as a rule, at any rate, extend its migrations so far south as the Zambesi.

Distribution.—The Cape Quail is found all over South Africa from Cape Town to the Zambesi; beyond our limits it has been noticed in Nyasaland, Madagascar, the Comoros, Cape Verde and Canary Islands, Madeira and the Azores.

The following are localities: Cape Colony—Little Namaqualand, September, October (Howard), Cape division, July, Stellenbosch, October, Worcester, December (S. A. Mus.), Deelfontein (Seimund), Middelburg, December to January (Gilfillan), Graham's Town, March (Layard), Port Elizabeth (Rickard), King William's Town September to January (Trevelyan and Pym), Pondoland, July (S. A. Mus.), Lady Grey, September to January (Lawrence); Natal—near Durban, April to June (Ayres), Maritzburg, November and December, near Newcastle, May, July, October (Butler, Feilden and Reid); Orange River Colony—Kroonstad, April (Symonds), Vrede-

fort Road (B. Hamilton), Basutoland, January to September (Murray); Transvaal—Potchefstroom, March and July (Ayres) Rustenburg and Pretoria (Barratt), Johannesburg August to February (Gilfillan), Barberton, February (Rendall); Rhodesia—near Salisbury (Marshall); German South-west Africa—Damaland (Andersson), Kalahari, May (Fleck); Portuguese East Africa—Inhambane (Peters).

Habits.—A certain number of Quails can be found at all times of the year in most parts of South Africa where suitable conditions exist, but the bulk of the birds are irregular migrants, the movements of which seem to depend on the rainfall and the consequent existence of fresh grass; in most cases the migrating flocks remain about a month or six weeks in one spot and then disappear.

A glance at the list of localities will show how varied are the times of their appearance. As in Europe, their migratory movements take place at night, hence the suddenness of their coming and going so often remarked upon. Layard states that they arrive in the neighbourhood of Cape Town about the middle or end of August; at first they are chiefly found about the grassy plains covered here and there with stunted bush, subsequently, as the corn springs up, in cultivated fields.

They feed chiefly on grass seeds, but also on insects, and they are very quick on the wing, though seldom flying far when flushed. The note, generally heard in the afternoon, is a "whitt-whitt whitt whitt," pronounced sharply with the lips, the second "whitt" being accentuated.

The eggs, six to twelve in number, are laid in a depression in the ground, lined with grass, sometimes in the standing crops, sometimes under the shelter of a bush; they are a yellowish-brown spotted with darker brown, sometimes very finely marked, sometimes with the spots forming large, irregular blotches; they measure on an average $1\cdot15 \times .90$. Eriksson found a nest in the North-western Transvaal on March 3; in the neighbourhood of the Cape and most parts of the Colony they breed soon after they arrive in September or October.

Mr. Wood writes that the Quails arrive in the neighbourhood of East London as a rule early in September. They hardly make a nest at all and as often as not lay their eggs on the bare ground; the clutch numbers nine or ten; by the middle of November the young are on the wing and as a rule they will all have moved off early in December.

661. *Coturnix delagorguei.* *Harlequin Quail.*

Coturnix delagorguei, *Delagorgue*, *Voy. Afr. Austr.* ii. p. 615 (1847) ; *Gurney*, in *Andersson's B. Damara*. p. 249 (1872) ; *Oates*, *Matabele-land*, p. 324 (1881) ; *Shelley*, *Ibis*, 1882, p. 361 [near Vryburg] ; *Sharpe*, ed. *Layard's B. S. Afr.* p. 605 (1884) ; *Nicolls and Eglington*, *Sportsm. S. A.* p. 106 (1892) ; *Bryden*, *Gun and Camera*, p. 474 (1893) ; *Grant*, *Cat. B. M.* xxii, p. 243 (1898) ; *id. Game Birds* i, p. 187 (1896) ; *Shelley*, *B. Afr.* i, p. 179 (1896) ; *Alexander*, *Ibis*, 1900, p. 445 ; *Reichenow*, *Vög. Afr.* i, p. 507 (1901) ; *Tredgold*, *Proc. Rhod. Sc. Assoc.* iii, p. 3 (1902).

Coturnix histronica, *Hartl.*, *Rev. Mag. Zool.* i, p. 495 (1849) *Layard*, *B. S. Afr.* p. 275 (1867) ; *id. Ibis*, 1869, p. 75 ; *Ayres*, *Ibis*, 1871, p. 262.

Coturnix fornasini, *Bianc.*, *Spec. Zool. Mosamb.* p. 299, pl. 1, fig. 2 (1865). "Leguatha" of *Matabele* (*Oates*).

Description. *Adult Male*.—General colour above blackish-brown slightly mottled with rufous about the nape, with narrow paler transverse bars and conspicuous pale yellow shaft streaks ; primaries blackish-brown not mottled ; a medium black patch extending down the throat from the chin with two wings bending round to the ear-coverts separating a white patch on both cheeks and a narrow band of white running from the ear-coverts round the front of the neck ; eyebrow white, ear-coverts dusky black ; breast and rest of the lower surface rich chestnut, the whole of the centre of the breast occupied by a large patch of velvety black ; a streak of the same colour extends on to the flanks.

Iris rich brown ; bill black ; legs salmon.

Length 5·85 ; wing 3·60 ; tail 1·0 ; culmen .45 ; tarsus .95.

The female has the chin and throat white, the sides of the neck and cheeks buffy white spotted with black, the rest of the lower surface dull chestnut with black spots and mottlings on the upper breast and along the flanks.

Mr. Tredgold found the female to be a little larger, averaging 7·06 against 6·8 for the male and also weighing a little more, 3·6 oz. against 3·2 oz.

Distribution.—The Harlequin Quail, which was first discovered by the French traveller Delagorgue, on the banks of the upper Limpopo, and to which he attached his own name, appears to be found over the greater part of Africa from the Island of St. Thomas in the west and Kordofan and the middle Nile in the east, southwards to Cape Colony.

Within our limits it is met with chiefly in the eastern half of

the Colony, extending northwards to Rhodesia, the Zambesi and Ovampoland. It is only between the months of October and March that it is to be seen in any great numbers, though it is possible to come across a few stray birds at all times of the year. In East and Central Africa it appears to have been obtained during all the months of the year, but our knowledge of its movements is still very imperfect.

South African localities are as follows :—Cape Colony—Swellendam, Grahamstown (Layard), East London (Wood), King William's Town (Trevelyan), Makara River, near Vryburg (Ayres); Natal (Bt. Mus.); Orange River Colony—near Lindley, breeding December (Sparrow); Transvaal—Upper Limpopo River, February (Delagorgue, type), Marico River (Ayres), Barberton and Swaziland, November to February (Gilfillan); Bechuanaland—near Lake Ngami, March (S. A. Mus.); Rhodesia—Bulawayo, October to March (Oates and Tredgold), near Salisbury, very abundant February, 1904 (Marshall); German South-west Africa—Ondonga, March (Andersson); Portuguese East Africa—Tete (Bt. Mus.), Chicowa and Kafue River (Alexander).

Habits.—Like the commoner species the Harlequin Quail appears from time to time in enormous numbers in certain localities, the movement being probably connected with copious rainfall; it has certainly been noticed that there is a correspondence between the rainfall and the appearance of this species in the neighbourhood of Bulawayo, where during the summer of 1901-2 there was an immense irruption of these little birds. An account of the matter has been given by Mr. Tredgold, to whom I am further indebted for most of the following particulars.

The birds appeared first in December, when they were very thin and appeared to be somewhat bedraggled after their journey; in January and February they increased enormously and got into very good condition; the food consisted almost entirely of little black grass seeds, together with an occasional caterpillar or termite; the note was observed to be a double one as opposed to the triple one of the common Quail. Soon after their arrival they began to breed; no nest was made, but the eggs, varying in number from seven to twelve, were laid on the bare ground under the shelter, as a rule, of a tuft of grass; the eggs are very like those of the common Quail, being dirty white or olive with dark brown spots, these varying from pin points to considerable splashes; the female sits very close all day, leaving her duties only in the evening in order to feed. According to Kuschel, eggs laid in captivity measure $1\cdot1 \times 0\cdot95$.

Genus IV. EXCALFACTORIA.

*Type.***Excalfactoria**, *Bp. Comptes Rend.* xlii, p. 881 (1856) ... *E. chinensis*.

This genus resembles *Coturnix* in most respects but differs in having a much more rounded wing, the 1st primary being about equal to the 6th and the difference between the length of the primaries and secondaries about equal to half the length of the middle toe ; the tail consists of eight very short feathers completely hidden underneath the upper tail-coverts.

Only three species are known ; two of these inhabit Southern Asia from India to Australia and New Britain ; the third is confined to Africa.

662. **Excalfactoria adansoni**. *Blue Quail*.

Coturnix adansonii, *Verr.*, *Rev. Mag. Zool.* 1851, p. 515 ; *Sharpe, ed. Layard's B. S. Afr.* p. 606 (1884).

Excalfactoria adansoni, *Grant, Cat. B. M.* xxii, p. 255 (1893) ; *id. Game Birds* i, p. 197 (1896) ; *Shelley, B. Afr.* i, p. 178 (1896) ; *Woodward Bros., Natal B.* p. 164 (1899) ; *Reichenow, Vög. Afr.* i, p. 509 (1902).

Coturnix emini, *Reichenow, Journ. Ornith.* 1892, p. 18, pl. 1, fig. 3.

Description. *Adult Male*.—Crown, neck and back blackish-brown washed with slate ; scapulars, wing-coverts and upper tail-coverts chestnut with slaty-blue shaft stripes ; wing-quills greyish-brown ; below chin and throat black, cheeks and lower throat white ; chest and remainder of lower surface slaty-blue with a few patches of chestnut on the flanks.

Iris red ; bill black ; legs golden yellow.

Length 5·2 ; wing 3·0 ; tail 1·12 ; culmen 3 ; tarsus .80.

The female is brownish rufous above, the crown with scaly marks of buff ; back varied with black, each plume with a central streak of white ; underneath pale fulvous with scaly marks of dusky fulvous.

Iris reddish-brown ; bill greyish-black ; legs light yellow.

Distribution.—This little Quail has hitherto been found only in West Africa from the Gold Coast to Gaboon, in Nyasaland and within our limits in Natal and the eastern part of Cape Colony. Here the only definite recorded localities are King William's Town (Trevelyan) and Pinetown in Natal, March (Ayres).

Habits.—Mr. Hutchinson states that this little Quail is pretty common in Natal though not appearing every season ; it frequents

long grass and reeds, breeds in the country and migrates as soon as the young are old enough to travel. Mr. Crawshay designated it as a bird of swift and strong flight, twisting on the wing like a common Quail.

Dr. Reichenow found a nest in the Cameroons in West Africa in November; it was placed in a slight hollow in the ground, lined with grass stalks and sheltered by a tussock; the eggs, eight in number, were light yellowish, blunt and not shiny; they measured about .80 × .70.

Genus V. NUMIDA.

Type.

Numida, *Linn.*, *Syst. Nat.*, 12th. ed. i, p. 273 (1766) ... *N. meleagris*.

Head and neck naked, except for a few strong bristles; on the crown of the head a bony elevation, cylindrical, conical or flattened—the helmet; a pair of fleshy wattles at the gape of the mouth; wings very rounded, the primaries shorter than the secondaries, the first primary shorter than the tenth, the fourth or fifth the longest; tail of sixteen feathers somewhat rounded; tarsi naked and stout without spurs. Plumage black, spotted with white.

This genus is confined to Africa and Madagascar; Reichenow recognises ten species, of these two are found within our area, a third just enters our limits.

Key of the Species.

- A. Bony helmet long, elevated, compressed and curved backwards; height 1·0 to 1·5, length along the base .9; no papillæ between the nostrils..... *N. coronata*, p. 227.
- B. Bony helmet elevated, cylindrical and slightly curved backwards; height 2·1, length along the base .55; with papillæ or warts between the nostrils..... *N. papillosa*, p. 231.
- C. Bony helmet short, stout and conical; height .8, length along the base .9 *N. mitrata*, p. 232.

663. **Numida coronata.** *Crowned Guinea-fowl.*

Numida meleagris (*nec Linn.*) *Sparrman*, *Travels*, 8vo ed. ii, p. 20 (1785).

Numida coronata, *Gray*, *List of B. iii*, *Gall.* p. 29 (1844); *Gurney*, *Ibis*, 1868, pp. 253, 463 [Natal]; *Elliot*, *Mon. Phas.* ii, pl. 40 (1870); *Ayres*, *Ibis*, 1877, p. 346, 1880, p. 265; *Butler*, *Feilden and Reid*, *Zool.* 1882, p. 338; *Shelley*, *Ibis*, 1882, p. 360 [Mashonaland];

Sharpe, ed. *Layard's*, B. S. Afr. pp. 581, 854 (1884) [in part] ; *Grant*, Cat. B. M. xxii, p. 376 (1893) ; *id. Ibis*, 1894, p. 536, fig. 2 ; *Distant*, *ibid.* p. 569 : *Rendall*, *Ibis*, 1896, p. 175 ; *Shelley*, B. Afr. i, p. 183 (1896) ; *Grant*, *Game Birds*, ii, p. 90 (1897) ; *Neumann*, *Orn. Monatsb.* 1898, p. 19 ; *Woodward Bros.*, *Natal B.* p. 165 (1899) ; *Marshall*, *Ibis*, 1900, p. 262 ; *Reichenow*, *Vög. Afr.* i, p. 441, fig. 3 on p. 436 (1901) ; *Oates*, Cat. B. Eggs, i, p. 63, pl. vii, fig. 2 (1901).

Numida mitrata (*nec Pall.*) *Layard*, B. S. Afr. p. 266 (1867).

Numida cornuta, *Finsch & Hartl. Vög. Ost-Afr.* p. 569 (1870) ; *Buckley*, *Ibis*, 1874, p. 386 ; *Holub & Pelzeln, Orn. Süd-Afr.* p. 183 (1882).

Numida transvaalensis, *Neumann, Orn. Monatsb.* 1899, p. 26.

Further information regarding this bird may be found in the following works :—

Burchell, *Travels*, i, p. 426 (1822) ; *Drummond*, *Large Game of South and South-east Africa*, p. 415 (1875) ; *Bryden*, *Kloof and Karoo*, p. 314 (1889) ; *id. Gun and Camera*, p. 467 (1893) ; *id. Nature and Sport*, p. 67 (1897) ; *Nicolls and Eglington, Sportsman S. A.* p. 108, pl. xi, fig. 58 (1892) ; *Kirby, Haunts of Wild Game*, p. 561 (1896).

“*Tarantal*” of Dutch ; “*Impangele*” of Amaxosa (Stanford) and Zulus (Woodward) ; “*Dicawka*” of Bechuanas (Nicolls and Eglington).

Description. *Adult.*—Bony helmet long, curved backwards, flattened laterally and compressed ; plumage black throughout, with rounded white spots, smallest on the neck, largest on the abdomen ; the spots on the back are separated from one another by a network of dotted white lines ; on the secondaries the spots are elongated to form short bars ; head and neck naked, save for a few black bristles below the eye, round the ear and on the nape.

Iris brown ; bill yellowish-horn ; top of head, base of the helmet and tip of the gape-wattles red ; rest of the head and neck, and base of the gape-wattles bluish-black ; legs and feet dark horn to black.

Length (of a male in the flesh) 23·5; wing 11·0; tail 6·4; culmen 1·7; tarsus 2·9. Weight of male about 3½ lbs.

The helmet varies considerably in length, in one case measuring 3·25, in another only 2·0 along the upper margin.

The sexes are alike.

Distribution.—This Guinea-fowl is found all over the eastern half of Cape Colony and Natal, whence it extends northwards to the Zambesi ; here it merges into the East African *N. mitrata*, while to the west in German South-west Africa it meets the closely-allied *N. papillosa*.

The following are localities : Cape Colony—Middelburg and Graaf Reinet (S. A. Mus.), Sunday River in Uitenhage (Sparrman

and Bryden), Fish River in Albany (Barber), East London (Rickard), Lady Grey div. (Lawrence), King William's Town (Trevelyan), Orange River at Upington (Bradshaw), near Douglas (Burchell), near Kimberley and Kuruman (S. A. Mus.), Setlagoli River, near Mafeking (Bryden); Natal—about Escourt and Ladysmith (Butler, Feilden and Reid), rare along the coast, Ubombo in Zululand (Woodward); Orange River Colony—Rhenoster River (Ayres),



FIG. 69.—Head of *Numida coronata*. $\times \frac{1}{2}$

Dornkop, breeding November (Sparrow); Transvaal—Lydenburg district (Rendall), Potchefstroom (Ayres in S. A. Mus.), Rustenburg (Ayres); Bechuanaland—Bamangwato (Buckley), Notwani and Botletli Rivers (Nicolls and Eglington); Rhodesia—near Salisbury (Marshall).

This Guinea-fowl has been introduced into the woods on the slopes of Table Mountain by Mr. Rhodes, and also into the Stellenbosch district, and is now very abundant in both these places, but there is no reason to believe that it was found there originally. It

has also been introduced into the plantations round Johannesburg, where it is preserved for shooting. Ashy birds with white feathers are often found among these coveys, and are probably due to the admixture of the domestic breed.

Habits.—The Guinea-fowl is gregarious, being found, especially in the dry season, in large flocks of as many as 200 birds; it usually resorts to the scrubby bush which borders streams and rivers, and, as a rule, is seldom far from water; if disturbed in the open it runs with great rapidity, faster than a man on foot, and takes refuge in the bush, perching on the lower branches of trees, where it can be easily seen and obtained; it is difficult to flush, though, if this can be managed, it is an easy bird to shoot, as it is somewhat heavy on the wing.

During the day it is usually found in the open, where it obtains its food, consisting of grass and other roots as well as insects, such as locusts and their eggs; it is specially fond of small bulbs. Bryden states that the Bushmen in Bechuanaland, when they kill these birds, cut out the crops, which are full of these bulbs, and skewer them together and hang them up to dry, as they consider them a particularly dainty morsel. As a rule the Guinea-fowl drinks once every twenty-four hours, resorting in the evening to the nearest water and then retiring to roost on a tree for the night. Their cry, "Kek, kek, kek," is heard morning and evening and is very monotonous. The eggs, which are laid on the ground in a small rounded depression, generally sheltered by long grass or scrub, are from seven to ten in number (Andersson and Pym state fifteen to twenty); they are somewhat sharply pointed at the small end and rounded at the other, and are of a pale brown colour with the pores darker, forming a series of pin points. They measure about $1\cdot7 \times 1\cdot42$; the breeding season is usually in September in the Colony, though Major Sparrow took some fresh eggs at Dornkop, in the Orange River Colony, on November 27, which he presented to the South African Museum.

The Guinea-fowl is tame and easily domesticated, and is often found on farms; sometimes the eggs are taken and placed under hens, sometimes the young chicks are caught, but it is stated that they never breed in captivity nor do they mate with the domestic race. The latter can be distinguished at once by their smaller size and by their white primaries and breast, and were probably originally derived from the West African species (*N. meleagris*).

At the same time Distant states that he has seen among the

numerous wild Guinea-fowls brought into the Pretoria market for sale an individual with white quills though without the characteristic white breast.

664. *Numida papillosa*. *Damaraland Guinea-fowl*.

Numida cornuta (*nec Finsch & Hartl.*) *Gurney*, in *Andersson's B. Damaral.* p. 238 (1872); *Grant, Cat. B.M.* xxii, p. 378 (1893); *id. Game Birds* ii, p. 92 (1897).

Numida coronata, *Sharpe*, ed. *Layard's B. S. Afr.* p. 581 (1884) [in part].

Numida papillosa, *Reichenow, Orn. Monatsb.* 1894, p. 145; *Fleck, Journ. Ornith.* 1894, pp. 389, 390 [with col. fig. of head]; *Neumann, Orn. Monatsb.*, vi, p. 20 (1898); *Reichenow, Vög. Afr.* i, p. 444, fig. 7, on p. 436 (1901).

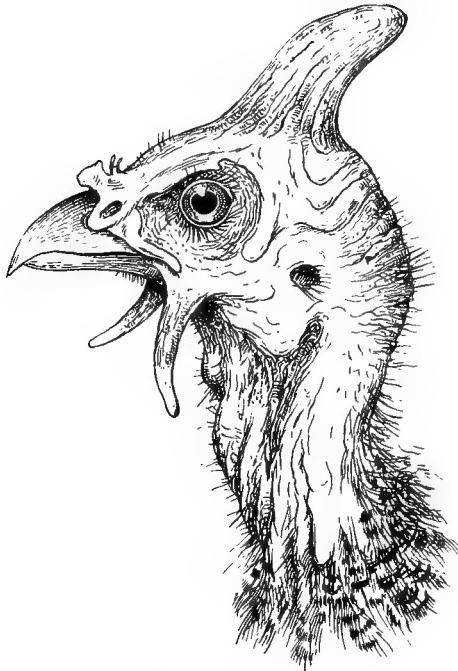


FIG. 70.—Head of *Numida papillosa*. $\times \frac{1}{2}$

Description.—Resembling *N. coronata* but with the bony helmet more elevated, almost cylindrical and not flattened. Iris dark

brown; naked skin of the face clear blue, helmet vermillion, naked part of the neck purplish-blue, wattles the same, scarlet at the tips; a number of small wattles on top of the beak between the nostrils; beak light brown, feet dark greyish.

Length 22·0; wing 10·9; tail 6·3; tarsus 2·7; helmet, height from middle of base 2·1; along the base .55.

Distribution.—This bird takes the place of the commoner Guinea-fowl (which it closely resembles) in German South-west Africa from Great Namaqualand to the Cunene, extending eastwards into the Kalahari some distance; it has also been obtained in the Mossamedes province of Angola.

Habits.—In this respect the Damaraland bird doubtless resembles the common form. Fleck states that he found a nest of this species on February 27, containing sixteen eggs; the nest was in a hollow in the sand and the eggs were thick in the shell, creamy brown without darker spots. Some of these were hatched out under a hen and the following year a pair of these young birds bred and produced nine young ones. This contradicts the prevalent idea in South Africa that these birds will not breed in captivity.

665. *Numida mitrata*. *East African Guinea-fowl.*

Numida mitrata, Pallas, *Spic. Zool. fasc. iv*, p. 18, pl. 3 (1767); Kirk, *Ibis*, 1864, p. 330; Grant, *Cat. B. M.* xxii, p. 378 (1893); *id. Game Birds ii*, p. 94 (1897); Shelley, *B. Afr. i*, p. 183 (1896); Alexander, *Ibis*, 1900, p. 447; Reichenow, *Vög. Afr. i*, p. 438 (1901).
“Inkanka” of Zambesi natives (Alexander).

Description.—Closely resembling *N. coronata*, but distinguished by the shape of the helmet, which is small, conical and stumpy, only about .5 inch high; the feathers round the base of the neck are finely barred with black and white. Iris black. Top of the head scarlet, helmet paler, naked skin of the side of the face and neck blue, wattles blue, red-tipped; bill yellowish-horn, legs and feet brownish-horn.

Length about 22; wing 10·7; tail 5·2; tarsus 2·8.

Distribution.—East Africa from the Zambesi northwards to Mombasa. Also found in Madagascar, the Comoro Islands and Rodrigues, where it has probably been introduced.

Within our limits it has been obtained by Alexander along the Zambesi and is specially recorded from Tete.

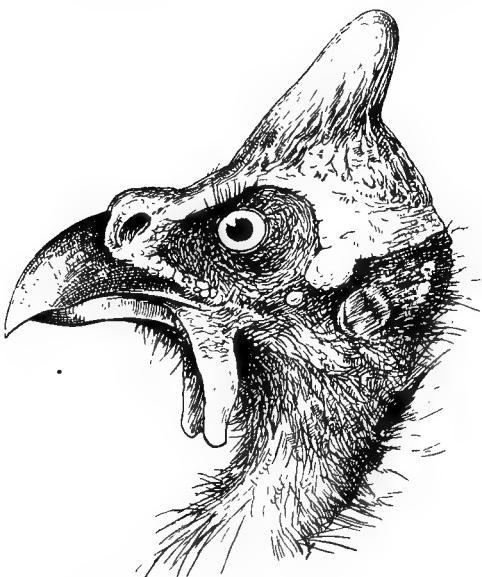


FIG. 71.—Head of *Numida mitrata*. $\times \frac{11}{12}$

Genus VI. GUTTERA.

Type.

Guttera, Wagl., *Isis*, 1832, p. 1225 *G. cristata*.

Head and neck naked and bare, except for an elongated crest of curly black feathers along the middle line from the base of the bill to the occiput; gape wattles present or absent; wing, tail and legs as in *Numida*. Plumage as in *Numida* except that the first four or five secondaries are margined with white.

Four species of this purely African genus are recognised; only one of these comes within our limits.

666. **Guttera edouardi.** *Crested Guinea-fowl.*

Numida cristata (*nec Pall.*) Kirk, *Ibis*, 1864, p. 330; Layard, *B. S. Afr.* p. 267 (1867); Drummond, *Large Game S.E. Afr.* p. 415 (1875).

Numida edouardi, Hartlaub, *Journ. Ornith.* 1867, p. 36; *id. Ibis*, 1870, p. 444; P. L. Sclater, *P.Z.S.* 1871, p. 495.

Numida pucherani (*nec Hartl.*) Sharpe, *ed. Layard's B. S. Afr.* p. 586 (1884).

Numida verreauxii, *Elliot*, *Ibis*, 1870, p. 300 [Natal] ; *P. L. Sclater*, *P.Z.S.* 1870, p. 383 ; *Layard*, *Ibis*, 1871, p. 105 [Zululand] ; *Elliot*, *Monogr. Phas.* ii, pl. 44 (1872) ; *Gurney*, *Ibis*, 1873, p. 255 ; *Sharpe*, *ed. Layard's B. S. Afr.* p. 585 (1884) ; *Seeböhm*, *Ibis*, 1887, p. 350 ; *Woodward Bros.*, *Natal Birds*, p. 165 (1899).

Guttera edouardi, *Grant*, *Cat. B. M.* xxii, p. 382 (1893) ; *Shelley*, *B. Afr.* i, p. 183 (1896) ; *Rendall*, *Ibis*, 1896, p. 175 ; *Sharpe*, *Ibis*, 1897, p. 516 [Swaziland] ; *Grant*, *Game Bds.* ii, p. 98 (1897) ; *W. L. Sclater*, *Ibis*, 1899, p. 112 [Inhambane] ; *Alexander*, *Ibis*, 1800, p. 448 ; *Reichenow*, *Vög. Afr.* i, p. 451 (1901) ; *P. L. Sclater*, *P.Z.S.* 1901, p. 1 [Wankies].

Numida sp. *P. L. Sclater*, *P.Z.S.* 1890, p. 86, pl. xii [nr. Victoria Falls]. “Inkankatori” of the Zambesi natives (Alexander).

Description. *Adult Male*.—Crown of the head with a crest of curly erect black feathers extending from the base of the beak to the occiput ; the rest of the head and the greater part of the neck bare ; feathers on the lower neck forming a black collar slightly washed with chestnut, the collar extending downwards and over the upper part of the breast ; rest of the plumage black with little round spots of bluish white and faint indications of chestnut ones interspersed, the feathers all narrowly edged with the same colour ; primaries dark brown, four or five of the outer secondaries broadly edged with dirty white, all the secondaries with longitudinal parallel lines of pale blue formed by confluent spots.

Iris bright blood red ; bill yellowish-horn ; base and bare parts of head and neck shiny leaden-black, a loose flap of skin below the occiput extending forwards over the ear-openings almost to the gape dirty bluish-white ; legs black.

Length 20·0 ; wing 10·5 ; tail 4·5 ; culmen 1·12 ; tarsus 2·80.

Distribution.—The Crested Guinea-fowl is found only in one or two districts of Natal, whence its range extends to the Zambesi and Nyasaland.

The following are recorded localities : Natal—Karkloof Forest, near Howick (Hutchinson), Coastlands north of Durban (Ayres) ; Zululand—Umgoye Forest and St. Lucia Bay (Layard) ; Transvaal—Zambana’s country on Swaziland border (Woodward) ; Rhodesia—Wankies (Zool. Soc.) near Victoria Falls (Kirk and Reid) ; Portuguese East Africa—Inhambane (Francis in S. A. Mus.), Shupanga (Kirk) and Zumbo (Alexander) on the Zambesi.

Habits.—This bird, which is far handsomer than the common Guinea-fowl, is found in small flocks of seven or eight individuals and frequents only the very densest and thickest bush.

Mr. Alexander gives the following account of it:—" By nature this bird is far more retiring than the Helmeted Guinea-fowl and possesses even a greater aptitude for running, seldom making use of flight. We were fortunate enough to obtain two specimens of this species near the river, above Zumbo, while on another occasion, when pitching our tent for the night we heard a flock close to the



FIG. 72.—Head of *Guttera edouardi*. $\times \frac{1}{2}$

water and not far off another one, but of the Helmeted species (*Numida mitrata*), enabling us to observe to a nicety the difference between the cries of the two species. The call of the former, otherwise the same as the latter, was varied now and again by a tremulous whistle towards nightfall and kept up long after night had set in.

"The Zambesi natives look upon this bird with a certain amount of superstition. Nothing would induce them to eat it, and they told us that its flesh was poisonous."

Order XIII. HEMIPODII.

The members of this little group, sometimes known as Button-Quails, closely resemble the true Quails externally in shape and plumage, but the birds are a good deal smaller, and (in the only South African genus) the hind toe or hallux is absent. As a rule the female is larger and more brightly coloured, and the male performs the duty of incubation. The eggs are laid on the ground, with little or no attempt at a nest, and the young are hatched covered with down, and able to run at once.

The following are the principal anatomical characters—Skull ægithognathous and schizorhinal: vertebræ all distinct from one another; sternum with only one deep notch on each side posteriorly; aftershaft present; oil gland tufted; accessory femoro-caudal muscle absent (in *Turnix*).

There are only two genera, which are in many respects very distinct from one another, and should perhaps be placed in separate families. As, however, only one of these (*Turnix*) is represented in South Africa, its position as regards the other (*Pedionomus*), which is confined to Australia, is immaterial to our purpose.

Family I. TURNICIDÆ.

Genus I. TURNIX.

	<i>Type.</i>
<i>Turnix</i> , Bonnat. <i>Tabl. Encycl. Méth.</i> i, pp. lxxxii, 5 (1790)	<i>T. sylvatica.</i>

Bill slender and straight; wings somewhat rounded, the first three primaries about equal in the African species; tarsus bare; three toes only, the hallux being absent.

Some twenty-one species of this genus, spread over Southern Europe, Asia and Australia, from Spain to China and Tasmania, and the whole of Africa including Madagascar, are known; three of these are found within our limits.

Key of the Species.

- A. Scapulars margined with white or greyish-white; a rusty patch on the chest, the black spots confined to the sides of the breast..... *T. lepurana*, p. 288.

- B. Scapulars margined with golden-buff.
- a. Throat white, breast thickly spotted with blue..... *T. hottentotta* ♂, p. 237.
 - b. Throat and breast rufous, spots not very numerous *T. hottentotta* ♀, p. 237.
 - c. Throat white, no spots, sides of the breast barred..... *T. nana*, p. 240.



FIG. 73.—Left foot of *Turnix lepurana*. $\times \frac{1}{4}$

667. ***Turnix hottentotta. Hottentot Hemipode.***

Hemipodius hottentottus, Temm. *Pig. et Gall.* iii, pp. 636, 757 (1815).
Turnix hottentottus, Layard, *B. S. Afr.* p. 276 (1867); *id. Ibis*, 1869, p. 375; Sharpe, *ed. Layard's B. S. Afr.* p. 607 (1884); Grant, *Ibis*, 1889, p. 464; *id. Cat. B. M.* xxii, p. 542 (1893); Shelley, *B. Afr.* i, p. 178 (1896); Grant, *Game Bds.* ii, p. 275 (1897); Reichenow, *Vög. Afr.* i, p. 303 (1900).

"Sand Quail" of English, "Reit Quartel" of Dutch Colonists.

Description. *Adult Male.*—General colour above, dark rufous; most of the feathers barred with black and edged with white, giving a general mottled appearance; scapulars conspicuously margined with golden-buff; wing-quills blackish-brown, the outer primary strongly margined with white; lores, space round the eye and cheeks mottled buff and white, chin and throat white; rest of the under parts also white, covered with semicircular black spots, most numerous on the chest; a slight wash of pale buff on the chest as well; tail elongated and pointed.

Length 6·0; wing 2·90; tail 1·40; culmen .40; tarsus .90.

In the female the chin, throat and chest are rusty-rufous and the abdomen and under tail-coverts white, the spots are very much fewer in number, in one specimen being almost absent. Wing 3·2.

Distribution.—This bird is apparently confined to the southern portion of the Cape Colony; it does not seem to reach Natal, nor has it hitherto been met with north of the Orange River.

The following are localities : Cape division, July (S. A. Mus.), Swellendam (Atmore), George (Bt. Mus.), Port Elizabeth and East London (Rickard); possibly the other species (*T. nana*) and not the present one may be met with at the two last-mentioned places, as it (*T. nana*) has been noticed at King William's Town.

Habits.—This species is found sparingly in Cape Colony; it is generally solitary, though occasionally two may be seen together; it is found on grassy plains or among the reeds of dried-up vleis; when flushed it flies a short distance, quickly settles down again, and then makes off at a run; it feeds on seeds and insects, and is usually very fat; it is a resident.

Atmore, who found a nest on a rocky mound near Swellendam, states that the eggs are five in number; examples in the South African Museum obtained many years ago by Miss A. van der Byl are very pointed at one end, of a yellowish-grey colour, very thickly speckled with spots and blotches of a yellowish and darker brown; they measure .90 to .96 × .75 to .80.

668. *Turnix lepurana. Kurrichane Hemipode.*

Ortygis lepurana, Smith, Rep. Exp. Centr. Afr. p. 55 (1836).

Hemipodus lepurana, Smith, Ill. Zool. S. Afr. Aves, pl. 16 (1838).

Turnix lepurana, Strickl. and P. L. Sclater, Contr. Ornith. 1852, p. 158; Gurney, Ibis, 1860, p. 216 [Natal]; Layard, B. S. Afr. p. 276 (1867); Gurney, in Andersson's B. Damaraland, p. 249 (1872); Buckley, Ibis, 1874, p. 387; Butler, Feilden and Reid, Zool. 1882, p. 339; Shelley, Ibis, 1882, p. 361 [Bechuanaland]; Sharpe, ed. Layard's, B. S. Afr. p. 608 (1884); Ayres, Ibis, 1885, p. 346, 1886, p. 292; Symonds, Ibis, 1887, p. 333; Grant, Ibis, 1889, p. 462; Nicolls and Eglington, Sportsm. S. A. p. 107 (1892); Bryden, Gun and Camera, p. 474 (1893); Grant, Cat. B. M. xxii, p. 539 (1893); Shelley, B. Afr. i, p. 178 (1896); Grant, Game Bds. ii, p. 272 (1897); Woodward Bros., Natal Bds. p. 166 (1899); Marshall, Ibis, 1900, p. 268; Alexander, Ibid. p. 444; Reichenow, Vög. Afr. i, p. 301 (1900); Oates, Cat. B. Eggs, i, p. 71, pl. vii, fig. 1 (1901).

"Riet-Quartel" of the Dutch, "Button-quail" of the English; also applied to the other species of the genus; "Mabuaneng" of the Basutos (Murray).

Description. Adult Male.—General colour above, brown, most of the feathers with narrow wavy bars of black edged with white, giving a scaly appearance to the whole; a white band down the middle of the head; lores, sides of the head, and neck white, tipped with black; wing-quills ashy-brown, first primary conspicuously edged with buff on the outer web; chin and throat white; sides of

the breast pale buff, each feather with a dark brown semicircular spot, centre of the chest and under tail-coverts pale rusty, becoming white on the abdomen ; central pair of tail-feathers elongated and pointed.

Iris very pale yellow ; bill bluish-horn with black tip ; feet pale brownish-yellow.

Length 5·25 ; wing 2·90 ; tail 1·10 ; culmen .40 ; tarsus .80.

The female is larger and more distinctly marked throughout ; the rusty patch on the chest is markedly darker than that of the male. Length 5·75 ; wing 3·3 ; tarsus .90.

This bird is regarded by Grant as merely a subspecies of *Turnix sylvatica* of Southern Europe and Northern Africa, from which it only differs in its slightly smaller size.



FIG. 74.—Head of *Turnix lepurana*. $\times \frac{1}{2}$

Distribution.—As in the case of so many other birds this Button Quail was first obtained and described by Sir A. Smith, from the neighbourhood of Kurrichane, now in the western Transvaal.

It is widely distributed throughout the whole of South Africa, except perhaps in the western half of Cape Colony. Beyond our limits it extends northwards to the Gold Coast and to north-east Africa and Aden.

The following is a list of localities as recorded, but as there has been a certain amount of confusion in regard to the identification of the species of this genus, too much reliance must not be placed on it, especially as regards the older records : Cape Colony—Port Elizabeth (Rickard), East London (Wood), Morokweng, Mafeking district (Bryden); Natal—Newcastle, August, and Pinetown (Butler, Feilden and Reid), Alexandra County and Zululand (Woodward); Orange River Colony—Kroonstad, April (Symonds); Transvaal—Potchefstroom, September (Ayres); Bechuanaland—near Palapye, December (Ayres); Rhodesia—Matopos, near Bulawayo, October (S. A. Mus.), near Salisbury (Marshall); German South-west Africa

—Gt. Namaqualand (Andersson); Portuguese East Africa—Senna and Chicowa, September (Alexander).

Habits.—The Kurrichane Hemipode seems to be everywhere somewhat scarce; it is found in the valleys among thick, dank grass, near the water of pools or rivers, and, as a rule, is solitary, never more than two being found together; it runs with great speed and lies very close, almost allowing itself to be trodden on rather than rise on the wing; its food consists of small seeds and insects.

Apparently from the dates given it must be a partial or irregular migrant, its movements probably depending on rain and the presence of suitable food.

Andersson noticed it only in the rainy season, Symonds only in April, at Kroonstad. Mr. Eriksson found a number of nests on the Limpopo, in the Rustenburg district of the Transvaal, in December. These were merely slight hollows in the ground lined with grass, and contained four eggs in each case when incubation had commenced. The eggs were abruptly pointed, of a dirty, green-coloured ground, densely spotted with indistinct purple, and light and dark brown.

Mr. Oates gives the measurements of .87 to .88 × .68 to .72 in the case of eggs taken in East Africa.

669. *Turnix nana. Natal Hemipode.*

Hemipodus nana, Sundevall, Oefvers. K. Vet. Akad. Forh. 1850,
p. 110.

Turnix hottentotta (nec Temm.), Shelley, Ibis, 1875. p. 85 [Natal];
Sharpe, ed. Layard's B. S. Afr. p. 607 (1884).

Turnix nana, Grant, Ibis, 1889, p. 463; id. Cat. B. M. xxii. p. 541
(1893); *Shelley, B. Afr. i, p. 178 (1896); Grant, Game Bds. ii, p. 275*
(1897); *Reichenow, Vög. Afr. i, p. 303 (1900).*

Description. *Adult Male.*—General colour above, black, mottled and barred with white and rufous; the rump and upper tail-coverts nearly pure black; scapulars margined with golden-buff; wing-quills brown, the outer ones margined with white; wing-coverts chestnut, most of the feathers with subterminal or terminal bands of black and white; lores, sides of the head and neck, mottled rufous and white; chin and throat pure white; chest rust colour; sides of the chest and flanks barred with black and white; abdomen white; under tail-coverts pale buff; tail elongated and pointed.

Iris brown; bill horn; upper mandible darker than the lower; legs and feet pale flesh.

Length 5·0 (6·0 in flesh); wing 2·9; tail 1·0; culmen .40; tarsus .85.

The female is a little larger and somewhat more brightly coloured. Wing 3·2.

In the young bird the buff on the breast is not nearly so marked, and the transverse bars extend entirely across.

Distribution.—This little Button Quail was first discovered by Wahlberg, in "Lower Caffraria" (*i.e.*, Natal), and was apparently lost sight of until recently, when Mr. Grant brought it into notice again. It has hitherto been obtained only at Pinetown in Natal, in March by Shelley, and in December by Stark, and at King William's Town (Bt. Mus.); outside our limits it has been met with in Nyasaland.

Habits.—Dr. Stark found two nests of this species near Pinetown, in Natal, on December 22nd and 23rd. In both cases the nest consisted merely of a slight hollow about three inches across, and about three-quarters of an inch deep in the sandy soil, lined with a few fine grass stalks. The nest was slightly sheltered in the one case by a broad-leaved plant, in the other by a tuft of grass, and in both cases the situation was a rough sandy piece of ground, with scanty herbage, near a little stream.

The eggs, which are now in the South African Museum, were, in both cases, three in number, and in one case had been incubated; they are very pale greenish-white, very thickly covered with small spots and blotches of a yellowish and a darker shade of brown. In shape they are nearly even ovals; they measure .95 to .90 × .76 to .75.

Order XIV. FULICARIAE.

The Rails and the Finfoots constituting this Order are marsh or water birds of skulking habits, running through and hiding in the grass and reeds. The lower portion of the tibia is bare of feathers, all the toes are long and slender and the hind toe is jointed at a higher level than the others; the young are hatched covered with down and can run and swim almost at once.

The skull is schizognathous and holorrhinal, and the basipterygoid processes are absent; the sternum has only one notch on each side posteriorly; there are two carotids; the cæca are long and the oil-

gland is tufted ; the ambiens, femorocaudal, accessory femorocaudal and semitendinosus muscles are always present.

There are two families only, both represented in our fauna.

Key of the Genera.

- A. Toes simple, with no lateral marginal lobes or webs.
 - a. Culmen distinctly longer than the middle toe and claw *Rallus*, p. 243.
 - b. Culmen distinctly shorter than the middle toe and claw.
 - b¹. No frontal shield at the base of the upper mandible.
 - a². Tarsus equal to or longer than the middle toe and claw..... *Crex*, p. 245.
 - b². Tarsus distinctly shorter than the middle toe and claw.
 - a³. Wings pointed, the secondaries falling short of the primaries by about the length of the hind toe and claw *Ortygometra*, p. 249.
 - b³. Wings more rounded, the difference between the longest primaries and secondaries less than the length of the hind toe and claw.
 - a⁴. Tail-feathers soft and decomposed ... *Sarothrura*, p. 252.
 - b⁴. Tail-feathers normal, not decomposed.
 - a⁵. Outer secondaries white *Coturnicops*, p. 257.
 - b⁵. Outer secondaries not white.
 - a⁶. Plumage variegated with white streaks *Limnobænus*, p. 258.
 - b⁶. Plumage black *Limnocorax*, p. 259.
 - b¹. Upper mandible prolonged on the forehead to form a frontal shield.
 - a². Wings long and pointed ; first primary longer than the secondaries ; toes with a narrow lateral margin ; plumage dusky *Gallinula*, p. 261.
 - b². Wings rounded, first primary equal to the second ; toes with no lateral margins, plumage blue and green..... *Porphyrio*, p. 266.
 - B. Toes with lateral marginal expansions or lobes corresponding to the phalanges.
 - a. Tail soft and short, about a quarter the length of the wing *Fulica*, p. 269.
 - b. Tail longer, about two-thirds the length of the wing ; feathers stiffened, pointed and graduated *Podica*, p. 273.

Family I. RALLIDÆ.

Aftershaft present in the contour feathers but rather small; fourteen or fifteen cervical vertebræ; from ten to fourteen rectrices; all five Garrodian thigh muscles present; deep plantar tendons galline (see vol. iii, p. 2, fig. 2b).

Genus I. RALLUS.

Type.

Rallus, Linn. *Syst. Nat.* 12th ed. i, p. 261 (1766) ... *R. aquaticus*.

Bill long and slender, the culmen longer than the middle toe and claw; no frontal shield; nostrils elongated ovals, in a long well-marked nasal groove, situated nearer to the base of the bill than to the anterior end of the groove; wings short and rounded,

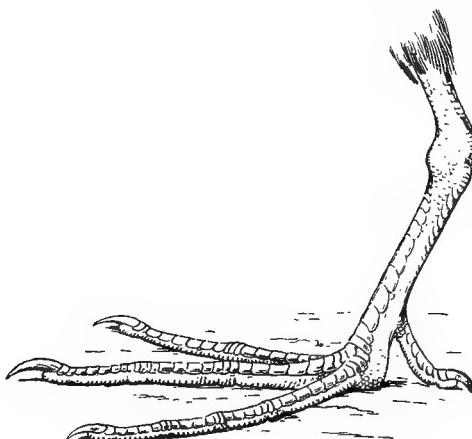


FIG. 75. —Left foot of *Rallus cærulescens*. $\times \frac{11}{12}$

the secondaries falling short of the primaries by very little; tail short, less than half the length of the wing; tarsus shorter than the middle toe and claw; toes unwebbed.

This is an almost cosmopolitan genus containing the Water Rails; about ten species are generally recognised, only one of which is found in the African Continent, while another is known from the Island of Madagascar.

670. *Rallus cœrulescens.* *Kaffir Rail.*

Rallus cœrulescens, *Gmel. Syst. Nat.* i, p. 716 (1788); *Grill, K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 54 (1858) [Knysna and Oudtshoorn]; *Layard, B. S. Afr.* p. 337 (1867); *Gurney, Ibis*, 1868, p. 471; *id. in Andersson's B. Damaral.* p. 316 (1872); *Ayres, Ibis*, 1873, p. 283, 1874, p. 107, 1877, p. 351; *Barratt, Ibis*, 1876, pp. 133, 213; *Holub & Pelzeln, Orn. Süd-Afr.* p. 295 (1882); *Sharpe, ed. Layard's B. S. Afr.* p. 610 (1884); *Sharpe, Cat. B. M.* xxiii, p. 25 (1894); *Shelley, B. Afr.* i, p. 175 (1896); *Woodward Bros., Natal B.*, p. 168 (1899); *Reichenow, Vög. Afr.* i, p. 275 (1900).
Rallus aquaticus (*nec Linn.*), *Gurney, Ibis*, 1859, p. 249 [Natal], 1868, p. 261 [Damaraland].

Description. *Adult.*—General colour above dark brown, darkest on the wings and tail and becoming a dark slaty-black on the crown; sides of the face, neck and breast dark slaty-blue, becoming white on the throat; flanks, thighs and abdomen black, transversely banded with narrow bars of white; under tail-coverts white; axillaries and under wing-coverts black, barred and mottled with white.

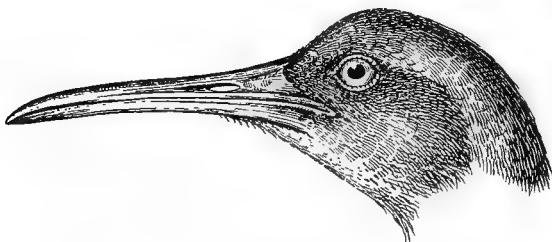


FIG. 76.—Head of *Rallus cœrulescens.* $\times \frac{11}{2}$

Iris red brown to blood red; bill and feet bright red.

Length 10·5; wing 4·20; tail 1·5; culmen 1·70; tarsus 1·5.

The young bird is browner than the adult, the sides of the neck and breast are brown, the chin and centre of the breast whitish tinged with rufous brown; the abdomen, flanks and under tail-coverts are brown, irregularly barred with rufous brown; iris dusky tawny, bill dusky-brown inclining to reddish about the tip and nostrils, legs dull brown.

Distribution.—Though nowhere very common, this Rail is widely spread over the greater part of South Africa and extends beyond our limits to southern Angola, Nyasaland and German East Africa;

it has also been met with in the Island of St. Thomas in the Gulf of Guinea.

The following are the chief recorded localities: Cape Colony—Cape div. November, Stellenbosch, September, and Paarl, April (S. A. Mus.), Beaufort West and Colesberg (Layard), Knysna, August, and Oudtshoorn, December (Victorin), near Port Elizabeth (Rickard), King William's Town (Trevelyan) and Kuruman (Berlin Mus.); Natal—Durban (Bt. Mus.), Maritzburg (Buckley), St. Lucia Lake (Woodward); Transvaal—Potchefstroom, September, November (Ayres); Rhodesia—Pandematenka (Holub); German Southwest Africa—Omanbonde (Andersson).

Habits.—Like other Rails this bird is seldom seen though probably not uncommon in suitable localities. It is found in swamps, haunting reedy thickets, bordered by rank grass and other aquatic vegetation. It runs and swims with great agility but is feeble on the wing and difficult to flush. It is a noisy bird with a loud and startling cry; the food consists of insects and worms, the remains of crabs have also been found in the stomach.

Mr. Millar has sent me the following account of the breeding habits of this Rail, which do not appear to have been hitherto described: "Last Saturday, August 16, I was fortunate when searching Clairmont Vlei (near Durban) to find a nest containing two eggs slightly incubated. The nest was about forty yards from the edge of the vlei amongst a dense mass of rushes growing in about two feet of water, and could only be seen by parting the rushes. The bird ran off the nest, allowing me to approach within a few feet before taking flight. The nest was constructed entirely of dried rushes densely packed within a few inches of the water. It was a deep cup-shaped structure, lined at the bottom with the flowery heads of the rushes."

"The eggs are pointed at both ends, measuring 1·25 × ·90; the ground colour is creamy white profusely spotted and clouded heavily at the obtuse end with various shades of brown, purple and grey, but only minutely and sparingly spotted at the other end."

Genus II. CREX.

Type.

Crex, Bechst. Orn. Taschenb. p. 336 (1803) *C. pratensis*.
Crecopsis, Sharpe, Bull. B. O. C. i, no. 5, p. 28 (1893) *C. egregia*.

Bill short and stout, about two-thirds the length of the middle toe and claw; nostrils oval; no frontal shield; wings broad and

rounded, the secondaries almost as long as the primaries, the second primary the longest, the first about equal to the fifth or sixth; tail very short, less than half the wing; tarsus equal to the middle toe and claw or rather longer; toes quite free.

Two species may be included in this genus, one the well-known European Corn Crake, which is only a migrant to Africa, the other a resident African species.

Key of the Species.

- A. Under wing-coverts and axillaries chestnut *C. pratensis*, p. 246.
- B. Under wing-coverts and axillaries barred with white..... *C. egregia*. p. 248.

671. *Crex pratensis. European Corn Crake.*

Rallus crex, *Linn. Syst. Nat.* 12th ed. i, p. 261 (1766).

Crex pratensis, *Bechst. Gem. Naturg. Deutschl.* ii, p. 461 (1803); *Gurney, Ibis*, 1863, p. 331 [Natal]; *Buckley, Ibis*, 1874, p. 388; *Ayres, Ibis*, 1877, p. 351; *Dresser, B. Eur.* vii, p. 291, pl. 499 (1878); *Oates, Matabeleland*, p. 324 (1881); *Shelley, Ibis*, 1882, p. 366 [Palapye]; *Woodward Bros., Natal B.* p. 168 (1899); *Marshall, Ibis*, 1900, p. 270; *Alexander, Ibis*, 1900, p. 444.
Ortygometra crex, *Layard, B. S. Afr.* p. 338 (1867); *id. Ibis*, 1869, p. 377; *Barratt, Ibis*, 1876, p. 213.
Crex crex, *Sharpe, ed. Layard's B. S. Afr.* p. 611 (1884); *id. Cat. B. M.* xxiii, p. 82 (1894); *Rendall, Ibis*, 1896, p. 175; *Shelley, B. Afr.* i, p. 176 (1896); *Reichenow, Vög. Afr.* i, p. 277 (1900).

Description.—*Adult.*—Above pale brown, with black centres to the feathers, especially on the head, back and wing-coverts; primary coverts and quills rufous-brown, the outer edge of the first primary being buffy-white, secondaries like the back; sides of the face, eyebrows and body below ochraceous-brown; chin, centre of the breast and abdomen somewhat paler, flanks darker, almost rufous, transversely barred with white; axillaries and under wing-coverts rufous.

Iris hazel; bill and legs pale brown.

Length 9·75; wing 5·3; tail 2·0; tarsus 1·6; culmen ·85.

During the European summer (when the bird is not found in South Africa) the eyebrows, sides of the face and breast are grey and not ochraceous. The nestling is covered with black down.

Distribution.—The Corn Crake is found over the greater part of Europe and Northern and Central Asia, from the British Isles to

the Yenesei during the northern summer. In the autumn it migrates southwards and winters in Arabia and throughout Africa. Within our area it is most common in the northern portion. It is stated by Marshall to be plentiful in Mashonaland, but in Cape Colony it is certainly a rare bird and seldom met with. It usually arrives late, *i.e.*, in December, and stays till March.

The following are recorded occurrences: Cape Colony—Cape division, only once, in 1864 (Layard), near Grahamstown (Atherstone), East London, January (Rickard), King William's Town, "early in the year" (Trevelyan); Natal—Pinetown, March (Ayres), Drakensberg, December (Buckley), Zululand (Bt. Mus.); Transvaal—Barberton, December (Rendall), Macamae, in Lydenburg, December (Barratt, in Bt. Mus.), Potchefstroom, March (Ayres);



FIG. 77.—Head of *Crex pratensis*. $\times \frac{1}{2}$

Bechuanaland—near Palapye, December (Ayres), Tati, March (Oates); Rhodesia—near Salisbury (Marshall), Zambesi Valley, near Feira (Stoehr, in S. A. Mus.), at Metacania, January (Alexander).

Habits.—The Corn Crake or Land-Rail does not appear to be anywhere very common, and only occurs in South Africa during the summer months, from December to March. It is generally found lurking in long grass and is difficult to flush. It runs with great speed and is said by Ayres to endeavour to escape the pursuit of dogs by taking considerable leaps up into the air over the grass with closed wings, thus breaking the line of scent. The power of flight is stated to be feeble, but yet we know that it makes a double journey every year of about 6,000 miles. Its food consists of insects. Both Buckley and Marshall notice that they have not heard the characteristic creaking call-note of the male in South Africa; probably it is only made use of during the breeding season in northern lands.

Mr. Fitzsimmons has sent me an egg which he believes to be that of this bird, and of which a good many specimens have been brought to him, so there can be little doubt that the Corn Crake, like some other European migrants, breeds in South Africa; the egg sent is white, slightly spotted, especially towards the blunter end, with pale grey and rufous-brown. It measures $1\cdot4 \times 1\cdot05$.

672. *Crex egregia*. *African Crake*.

Crex egregia, Peters, Monatsb. Akad. Berlin, 1854, p. 134; Sharpe, ed. Layard's B. S. Afr. p. 612 (1884); Ayres, Ibis, 1877, p. 352, 1885, p. 346, 1886, p. 293; Shelley, B. Afr. i, p. 176 (1896); Reichenow, Vög. Afr. i, p. 278 (1900).

Ortygometra egregia, Finsch & Hartlaub, Vög. Ost-Afr. p. 778 (1870); Oates, Matabeleland, p. 324 (1881).

Crecopsis egregia, Sharpe, Cat. B. M. xxiii, p. 81 (1894); Marshall, Ibis, 1900, p. 263.

Description.—*Adult*.—General colour above olive-brown, most of the feathers, especially on the wings, centre of the back and tail with dark brown to black centres; primary quills plain dark brown; ear-coverts and sides of the face silvery-slate; chin and a streak from the nostrils to above the eye white; upper breast slaty washed with olive; rest of the under surface, including the axillaries and under wing-coverts, transversely banded with black and white.

Iris crimson-lake, orbital skin vermillion; bill slaty-green, reddish at the base of the lower mandible; feet pale brown.

Length 7·5; wing 4·7; tail 1·5; culmen 1·0; tarsus 1·70.

Young birds are browner and less olive than the adults; the eye-brow is brown; the sides of the face washed with brown; the breast is brown, not slaty, and the bars on the under surface are broader and not so distinct as in the adults.

Distribution.—This Crake was first obtained by Dr. Peters many years ago at Tete, on the Zambesi; though widely distributed over the greater part of Africa from the Gambia and White Nile southwards, it is everywhere rare, and has not been met with, so far as I am aware, in Cape Colony.

The following are recorded localities: Natal—near Durban, frequent (Millar), Pinetown, March (Ayres); Transvaal—Potchefstroom, February, May, July (Ayres); Rhodesia—Bulawayo, December (Oates), Makabusi River, near Salisbury (Marshall), Zambezi Valley, near Feira, February (Stoehr in S. A. Mus.); German

South-west Africa—Damaraland (Eriksson); Portuguese East Africa—at sea, twenty miles off the mouth of the Limpopo River (S. A. Mus.), Tete, on the Zambezi (Peters).

Habits.—This scarce Crake is found in marshy places, where it lives on worms and aquatic insects; little has been recorded about its habits. Mr. Marshall gives me the following note: “This species was first brought to my notice by Mr. Swynnerton, who shot one on the Makabusi River, quite close to Salisbury. Since then I have seen two more examples, and they are probably not uncommon, as on one wet day I heard them calling in some numbers in a dense and impenetrable reed-bed, lower down the Makahusi. The stomach of Mr. Swynnerton’s specimen contained ants and some vegetable matter.”

Mr. A. D. Millar tells me that this Rail is not uncommon in the marshes about Durban, generally solitary, but sometimes in pairs, but that they are always difficult to flush even with dogs. Mr. Alfred Millar shot a female off the nest on November 18th; in the nest were three pink eggs, while a fourth, rather more brightly coloured, was found in the oviduct of the bird itself.

Genus III. ORTYGOMETRA.

	<i>Type.</i>
Ortygometra , Leach, <i>Syst. Cat. Mamm. Bds. Bt. Mus.</i>	
p. 34 (1816)	O. parva.
Porzana , Vieillot, <i>Analyse</i> , p. 61 (1816)	O. porzana.

Bill of moderate length and rather compressed, the culmen about two-thirds the length of the tarsus; nostrils oval; no frontal shield; wings less rounded than in the other genera, the secondaries falling short of the primaries by about the length of the hind toe and claw; tarsus distinctly shorter than the middle toe and claw; toes not webbed.

Some fourteen species of this almost cosmopolitan genus have been hitherto recognised; two of these occur in South Africa.

Key of the Species.

- A. Larger, wing about 5·0; bill yellow, breast spotted *O. porzana*, p. 250.
- B. Smaller, wing about 3·5; bill dark green, breast unspotted *O. pusilla*, p. 251.

673. *Ortygometra porzana*. *Spotted Crake*.

Rallus porzana, *Linn. Syst. Nat.* 12th ed. i, p. 262 (1766).

Ortygometra maruetta, *Leach, Syst. Cat. Mamm. Bds. Bt. Mus.* p. 34 (1816).

Porzana maruetta, *Dresser, B. Eur.* vii, p. 267, pl. 496 (1878); *Shelley, Ibis*, 1882, p. 366 [Bechuanaland].

Porzana porzana, *Sharpe, ed. Layard's B. S. Afr.* p. 613 (1884); *id. Cat. B. M.* xxiii, p. 93 (1894); *Shelley, B. Afr.* i, p. 176 (1896).

Ortygometra porzana, *Fleck, Journ. Ornith.* 1894, p. 383; *Reichenow, Vog. Afr.* i, p. 283 (1900).

Description. *Adult.*—General colour above olive-brown, with a few black centres to the feathers, especially in the middle of the back; the nape of the neck, wings and back, further ornamented with little white spots and lines; crown of the head unspotted and rump almost black; sides of the face, neck and breast olive, very thickly spotted with white, chin almost pure white; ear-coverts unspotted olive-brown; lower breast and abdomen white, becoming straw-coloured on the under tail-coverts; flanks broadly barred with white and olive-brown; axillaries and under wing-coverts brown, barred with white.

Iris brown; bill yellow, orange-red at base, dusky on the culmen, and at the tip; legs and feet green.

Length about 8·25; wing 5·0; tail 2·25; culmen .75; tarsus 1·2.

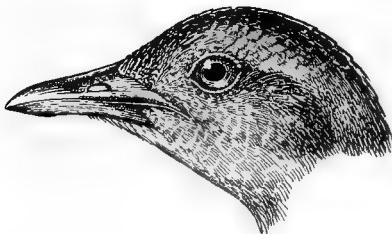
The female has the sides of the face more mottled than the male.

Distribution.—The Spotted Crake is found throughout Europe and Western Asia from the British Isles to Yarkand during the summer months; in the winter it migrates southwards to India and Africa.

It can hardly be called a South African bird as it has only been recorded twice from within our limits. A female was obtained by Ayres while travelling with Mr. Jamieson at Selenia Pan, in Sechele's country in Bechuanaland, in December, and Fleck procured a second example at Namas in the Kalahari, in December. The South African Museum has recently received several examples from the Zambesi Valley, near Feira, presented by Dr. Stoehr.

674. *Ortygometra pusilla.* *Baillon's Crake.*

- Rallus pusillus, *Pall. Reis. Russ. Reich.* iii, p. 700 (1776).
 Rallus intermedius, *Hermann, Obs. Zool.* i, p. 198 (1804).
 Rallus minutus, *Pall. Zoogr. Rosso-Asiat.* ii, p. 155 (1811).
 Rallus bailloni, *Vieill. N. Dict. Hist. Nat.* xxviii, p. 548 (1819).
Gallinula pygmæa, Brehm, Lehrb. Naturg. Eur. Vög. ii, p. 641 (1824).
Ortygometra pygmæa, Gurney, Ibis, 1865, p. 273 [Natal]; *id. in Andersson's B. Damaral.* p. 317 (1872); *Ayres, Ibis,* 1873, p. 283, 1874, p. 107.
Ortygometra minuta, Layard, B. S. Afr. p. 338 (1867).
Porzana pygmæa, Ayres, Ibis, 1877, p. 351.
Porzana bailloni, Butler, Feilden and Reid, Zool. 1882, p. 426; *Sharpe, ed. Layard's B. S. Afr.* p. 614 (1884); *Ayres, Ibis,* 1885, p. 346.
Porzana intermedia, Sharpe, Cat. B. M. xxiii, p. 103 (1894); *Shelley, B. Afr.* i, p. 176 (1896).
Porzana obscura, Neumann, Orn. Monatsb. 1897, p. 191.
Ortygometra pusilla obscura, Reichenow, Vög. Afr. i, p. 284 (1900).

FIG. 78.—Head of *Ortygometra pusilla.* $\times \frac{1}{2}$

Description. *Adult.*—General colour above rich olive-brown; the feathers of the back and wings with black centres and white spots and frecklings; rump blackish, also with a few white markings; primaries ashy-brown, the first with a narrow white border along the outer web; sides of the face and neck, including the ear-coverts, eyebrows and lores, throat and breast, bluish-slate; abdomen, flanks and under tail-coverts spotted and banded with white; under wing-coverts and axillaries ashy, with a few white spots.

Iris orange to red; bill dark green, darker along the culmen and at the tip; legs and feet olive.

Length 7·25; wing 3·5; tail 1·75; culmen ·65; tarsus 1·0.

The male in winter (October to March) has a somewhat whiter and paler throat. The young bird is rather more rufous in tone above, the sides of the face and eyebrow are rufous-brown; lores

whitish ; throat, breast and abdomen dull white ; foreneck and chest rufescent barred with dusky. Iris light ashy-brown.

Distribution.—Baillon's Crake is spread over the greater part of Europe, from England, where, however, it is only a straggler, to Lake Baikal in Central Asia, and southwards throughout East, South and South-west Africa and Madagascar. It appears to be a resident in Africa.

Reichenow considers the African bird distinct from the true Baillon's Crake of Europe and Western Asia, and distinguishes it as a subspecies, under the name of *O. pusilla obscura*. However this may be, our bird is widely spread over suitable localities in South Africa, as the following list of recorded localities shows : Cape Colony—Cape division, November, near Vryburg, September (S. A. Mus.), Swellendam (Layard), Port Elizabeth, not common (Brown) ; Natal—Maritzburg (Ayres), Newcastle, September, October (Butler) ; Transvaal—Potchefstroom, January, April, July (Ayres), Pretoria (S. A. Mus.) ; Bechuanaland—Lake Ngami district (Andersson) ; German South-west Africa—Omanbonde, Ondonga and Okavango (Andersson).

Habits.—Baillon's Crake is found about vleis and stagnant pools or even along small streams where there is sufficient rank grass to form a shelter ; like all rails it is somewhat difficult to flush ; when on the wing it flies rather heavily and but a short distance, dropping down again into the herbage and making off on foot. Minute crustacea, mollusca, worms and insects form its food. It is excellent eating.

Andersson found nests of this Crake at Omanbonde in northern Damaraland ; they were composed of pieces of the stalks of reeds and rushes and other vegetable substances ; the eggs, six or seven in number, are brownish-buff or olive-brown, closely spotted with obscure markings of darker.

Genus IV. SAROTHRURA.

	<i>Type.</i>
Alechthelia (<i>nec Less.</i>) <i>Swains.</i> , <i>Class B.</i> ii, p. 358 (1837)	<i>S. lineata.</i>
Corethrura (<i>nec Gray</i>), <i>Reichenb.</i> , <i>Nat. Syst. Vög.</i> pl. xxi, fig. 1-4 (1849)	<i>S. lineata.</i>
Sarothrura , <i>Heine & Reichenow</i> , <i>Nomencl. Mus. Hein.</i> p. 319 (1890)	<i>S. rufa.</i>

Bill slender and short, slightly compressed, the culmen less than half the length of the middle toe and claw; nostrils pervious; no frontal shield; wings short and rounded, the secondaries falling short of the primaries by much less than the length of the hind toe and claw; tail-feathers soft and decomposed, but projecting beyond the coverts and not concealed; tarsus short, less than the length of the middle toe and claw; toes not webbed.

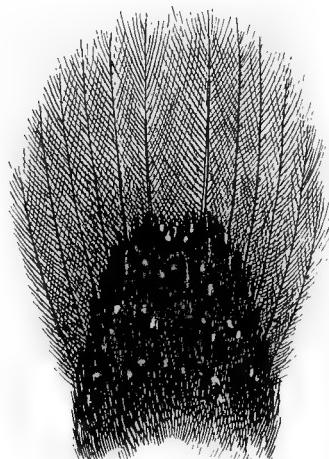


FIG. 79.—Tail of *Sarothrura rufa* slightly schematised to show the decomposed feathers.

This genus consists of nine species confined to Africa and Madagascar; three are found within our limits.

- A. Tail black with a few white spots *S. rufa*, p. 255.
- B. Tail chestnut, unspotted *S. lineata*, p. 253.
- C. Tail barred brown and black *S. elegans*, p. 254.

675. *Sarothrura lineata*. Jardine's Crake.

- Alechthelia lineata*, Swains., *An. in Menag.* p. 339 (1837).
Gallinula jardini, Smith, *Ill. Zool. S. Afr. Aves*, pl. 21 ♂ (1839).
Corethrura ruficollis (*nec Gray*) Layard, *B. S. Afr.* p. 339 (1867); *id. Ibis*, 1869, p. 377; Sharpe, *ed. Layard's B. S. Afr.* p. 616 (1884).
Corethrura lineata, Sharpe, *Cat. B. M.* xxiii, p. 118 (1894); Shelley, *B. Afr. i.* p. 177 (1896); Woodward Bros., *Natal B.*, p. 169 (1899).
Sarothrura lineata, Reichenow, *Vög. Afr. i.* p. 288 (1900).

Description. *Adult male.*—General colour above black, all the feathers longitudinally streaked with whitish, which becomes somewhat more yellow on the middle of the back; crown, nape and sides of the face rich rufous; tail, which consists of very decomposed feathers, also rufous, black at the extreme base; wing-quills brown, the outer edge of the outer one white; chin and throat white; rest of the lower surface black, streaked with white, like the upper surface, but rather more broadly.

Length 5·50; wing 2·8; tail 1·75; culmen .45; tarsus .75.

The female differs considerably from the male; general colour above black streaked on the crown and nape, barred on the rest of the upper surface with fulvous; wings as in the male; tail-feathers chestnut barred with black; sides of the face and under parts whitish, spotted finely on the cheeks, more coarsely on the breast, with black; under tail-coverts banded black and rufous; wing 2·75.

Distribution.—Jardine's Crake is a rare bird, seldom obtained. It is known from Cape Colony, Natal and Rhodesia only, within our limits, but has recently been procured by Mr. Whyte at Mlosa in Nyasaland.

The following are recorded occurrences within our area: Cape Colony—Frensch Hoek in Paarl div., June, Swellendam and Knysna (Layard), Port Elizabeth and East London (Rickard), King William's Town (Trevelyan); Natal—Victoria County (S. A. Mus.), Pinetown (Ayres) and Ifafa (Woodward); Rhodesia—nr. Salisbury (Marshall).

Habits.—Like most of the birds of this family, Jardine's Crake is rare in collections, probably more on account of its retiring habits than of its real scarcity. It is generally found in long grass or low brushwood and has a slow and awkward flight seldom prolonged for any length of time. A nest was found by Mr. Leopold Layard at Grootvadersbosch, in the Swellendam division; it contained four eggs; one of these, still preserved in the South African Museum, is oval, somewhat pointed at one end, smooth and somewhat shiny and pure white. It measures 1·03 × .71.

676. *Sarothrura elegans*. *White-spotted Crake.*

Gallinula elegans, Smith, *Ill. Zool. S. Afr. Aves*, pl. 22 (1839).

Corethrura pulchra (*nec* Gray), *Layard, B. S. Afr.* p. 339 (1867);

Sharpe, ed. Layard's B. S. Afr. p. 615 (1884).

Corethrura elegans, *Finsch, Journ. Ornith.*, 1867, p. 249 [Durban];

Sharpe, Cat. B. M. xxiii, p. 120 (1894); *Shelley*, B. Afr. i, p. 177 (1896).

Sarothrura elegans, *Reichenow*, Vög. Afr. i, p. 287 (1900).

Description.—*Adult Male*.—Crown of the head, sides of the face, neck and chest rich chestnut; back and wings black, thickly covered with oval and ochraceous spots, the primaries spotted on their outer webs with the same colour; tail banded with chestnut and black; lower breast and abdomen black, conspicuously spotted with white; under tail-coverts barred reddish buff and black; axillaries and under wing-coverts blackish, slightly mottled with white.

Length about 5·75; wing 3·5; tail 1·75; culmen ·5; tarsus 1·10.

The female is a warm brown above covered with numerous pale ochre spots, each of which is bordered with a smaller black one above and below; the primaries are brown slightly spotted along the outer web; the tail transversely banded with warm brown and black; below the throat is pure white, the rest ochraceous white, darkest on the chest and flanks, all mottled and barred with black and brown. Bill and feet reddish-horn.

Distribution.—The White-spotted Crake was considered to be confined to Cape Colony and Natal, where it is a rare bird and seldom met with. Dr. Reichenow, however, has recently received some examples from the Cameroons, in West Africa which he considers identical with the South African species, but which Dr. Sharpe has described as distinct.

The few recorded South African localities are: Cape Colony—Knysna (Layard), Port Elizabeth, rare (Brown), East London, June (Rickard in S. A. Mus.), King William's Town (Trevelyan); Natal—nr. Durban, February, August (Bt. Mus.).

Habits.—Sir Andrew Smith states that this Crake is found near stagnant water where there is plenty of cover owing to the presence of beds of reeds and rushes.

677. *Sarothrura rufa*. *Red-chested Crake*.

Rallus rufus, Vieill., N. Dict. H. N. xxviii, p. 564 (1819).

Porzana dimidiata, Less., Traité d'Orn. p. 537 (1831).

Gallinula dimidiata, Smith, Ill. Zool. S. Afr. Aves, pl. 20 (1839).

Corethrura ruficollis, Gurney, Ibis, 1859, p. 249 [Natal], 1868, p. 261 [Transvaal].

Corethrura dimidiata, Layard, B. S. Afr. p. 339 (1867); *Sharpe*, ed. Layard's B. S. Afr. p. 615 (1884).

Alecthelia dimidiata, *Gurney*, in *Andersson's B. Damaraland*, p. 320 (1872); *Ayres*, *Ibis*, 1877, p. 354.

Corethrura rufa, *Sharpe*, *Cat. B. M.* xxiii, p. 121 (1894); *Shelley*, *B. Afr.* i, p. 177 (1896).

Sarothrura rufa, *Reichenow*, *Vög. Afr.* i, p. 288 (1900).

Description. *Adult Male.*—Head, nape, neck all round, throat and chest, rich rufous chestnut; rest of the upper surface black, longitudinally streaked with white, the latter colour being on the tail more in the form of spots; primaries brownish-black, the first two with a whitish line along the outer web; lower breast and rest of the lower surface black, streaked or spotted with white.

Iris dark hazel; bill and legs greenish black.

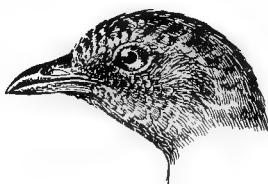


FIG. 80.—Head of *Sarothrura rufa*. $\times \frac{1}{2}$

Length about 7·0; wing 3·0; tail 2·10; tarsus 1·0; culmen .45.

The female is black above throughout, spotted on the head and back but not on the tail with ochre spots and dashes; beneath the throat is pure unspotted white; the breast is ochraceous white, spotted and mottled, especially on the sides, with black; the under tail-coverts are black, spotted like the back. Iris, bill and feet dusky-brown.

Distribution.—Of the three South African species of this genus the present one seems on the whole to be the most abundant. It has been found in Cape Colony, Natal and the Transvaal and in German territory and extends beyond our limits to South Angola.

The following are recorded localities: Cape Colony—Cape div. December (S. A. Mus.), The Traka in Willowmore (Atmore), St. John's River (Reichenow); Natal—Durban, September (Bt. Mus.); Transvaal—Potchefstroom, March, July (Ayres); German Southwest Africa—Omanbonde (Andersson).

Habits.—Like the others of the genus, this bird is found in marshy situations, where it skulks in the long grass and thick stuff and is very difficult to flush; its flight is excessively feeble, extending only three or four yards, and it can easily be caught. It swims

well and carries its tail erect. Andersson states that it breeds in Damaraland, but gives no particulars. An egg taken by Atmore from the oviduct of a female is stated by Layard to be pure white and to measure $1\cdot1 \times .85$.

Genus V. COTURNICOPS.

Type.

- Coturnicops**, *Bp. Conspl. Syst. Ornith.* p. 46
(1856) *C. noveboracensis*.

Bill short and stout, culmen less than the inner toe; no frontal shield; wings short and rounded, difference between the primaries and secondaries less than the length of the culmen or hind toe; outer secondaries white; tail-feathers normal, not decomposed; tarsus shorter than the middle toe and claw; toes not webbed.

This genus contains only four species; they are found respectively in North America, Brazil, North China and Japan, and South-eastern Africa.

678. **Coturnicops ayresi.** *White-winged Crake.*

Coturnicops ayresi, *Gurney, Ibis*, 1877, p. 352, pl. vii; *Sharpe, ed. Layard's B. S. Afr.* p. 616 (1884); *Shelley, B. Afr.* i, p. 177 (1896); *Reichenow, Vög. Afr.* i, p. 286 (1900).
Ortygops ayresi, *Sharpe, Cat. B. M.* xxiii, p. 129 (1894).

Description. Adult female.—Crown and neck all round rufous, streaked with black, especially toward the centre of the crown; back black with a few white spots and brown and white edgings to the feathers; primary coverts and quills pale brown unspotted; outer secondaries white, inner ones like the back; tail-coverts and tail



FIG. 81.—Head of *Coturnicops ayresi.* $\times \frac{1}{2}$

rich rufous barred with black, sides of the face and cheeks dusky, with darker bars; below chin white, breast rufous brown, paler on the sides; flanks black, spotted with white; under wing-coverts

white; under tail-coverts rufous banded with black; iris ashy hazel; tarsi and feet dusky pink.

Length about 5·5 (in flesh according to Ayres 6·28); wing 3·0; tail 1·5; tarsus .85; culmen .40.

An immature female has the breast dirty white slightly mottled with darker centres to the feathers.

Distribution.—This is one of the rarest of South African birds. Mr. Ayres first obtained two females on October 4 and November 24, 1876, at Potchefstroom, one of which is now in the British Museum; a third specimen, also in the same collection, was shot by Mr. E. O. Anstey, in August, near King William's Town. So far as I am aware, no other examples in collections are known.

Habits.—Mr. Millar informs me that this Crake is found in the vleis about Durban, but is not easily flushed. When it does take flight the white patch on the wing is conspicuous. The flight is short, and after alighting in the rushes it is seldom put up a second time.

Genus VI. LIMNOBÆNUS.

Type.

Limnobænus, Sundev., Av. Meth. Tent., p. 130 (1872)... L. fuscus.

Bill short and stout; the culmen shorter than the hind toe and claw; no frontal shield; wings somewhat pointed but the secondaries falling short of the primaries by less than the length of the hind toe and claw; first primary as long as the longest secondary; tail-feathers normal not decomposed; tarsus very distinctly shorter than the middle toe and claw.

This is a genus of four or five species spread over Africa and Southern and Eastern Asia; only the single species here described is found within the limits of our area.

679. **Limnobænus marginalis.** Hartlaub's Crake.

Porzana marginalis, Bp. Comptes Rend. xlili; p. 599 (1856); Hartlaub, Orn. W. Afr. p. 241 (1857).

Ortygometra marginalis, Gurney, in Andersson's B. Damaral. p. 318 (1872).

Crex marginalis, Sharpe, ed. Layard's B. S. Afr. p. 612 (1884).

Limnobænus marginalis, Sharpe, Notes Leyd. Mus. xv, p. 270 (1893); id. Cat. B. M. xxiii, p. 335 (1894).

Corethrura marginalis, Reichenow, Vög. Afr. i, p. 282 (1900).

Description. *Adult Male.*—General colour above black, somewhat greyish on the head and neck, somewhat browner on the scapulars, coverts and secondaries, most of which are distinctly margined with greyish-white. Primaries ashy-black, the outer web of the first white; below, the sides of the head, breast, flanks and abdomen ashy-grey passing to pure white on the chin and centre of the abdomen; a slight wash of rufous brown on the centre of the breast; under tail-coverts rufous-brown.

Iris brown tinged with reddish-yellow; bill horn brown, paler on the lower mandible; legs and feet dark brown or dusky-green.

Length about 7·0; wing 2·9; tail 1·8; culmen .61; tarsus 1·3; middle toe 1·8.

A young bird is browner above; the sides of the face and of the body somewhat tinged with rufous.

Distribution.—This is a rare Crake, first described by Hartlaub from Gaboon in West Africa. Within our limits it has only been obtained by Andersson at Ondonga in Damaraland in February and March, and more recently near East London in May by Mr. Bonstow; the last example is preserved in the South African Museum. It has also been recorded from Ribe near Mombasa and from Biskra in Algeria.

Habits.—Mr. Andersson found this bird breeding on several occasions in March and February at Ondonga in Damaraland; the eggs, four or five in number, were yellowish with a broad zone of light brownish-red at the thicker end; the nests were placed on the ground, on one occasion at the edge of a marsh in a dryish tuft of grass, on another occasion far from water and with the surrounding grass tied above it, as in the case of the nest of *Gallinula angulata*.

Genus VII. LIMNOCORAX.

Type.

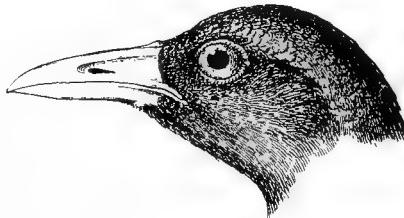
Limnocorax, Peters, Monatsb. Ak. Berlin, 1854, p. 187.....*L. niger*

Bill stout and short, culmen a good deal shorter than the inner toe; no frontal shield; wings rounded, the secondaries falling short of the primaries by less than the length of the hind toe and claw; the first primary considerably shorter than the longest secondary; tail-feathers normal, not decomposed, tarsus distinctly shorter than the middle toe and claw; toes not webbed; secondaries not white; plumage uniform black.

Only the single species here described is assigned to this genus.

680. *Limnocorax niger*. *Black Crake*.

- Rallus niger*, *Gmelin, Syst. Nat.* i, p. 717 (1788).
Gallinula flavirostra, *Swains. B. W. Afr.* ii, p. 244, pl. 28 (1837).
Limnocorax flavostris, *Gurney, Ibis*, 1862, p. 35 [Natal]; *Sharpe, Ibis*, 1897, p. 516 [Eshowe].
Gallinula niger, *Layard, B. S. Afr.* p. 342 (1867).
Limnocorax niger, *Gurney, Ibis*, 1868, p. 470 [Mooi River]; *id. Andersson's B. Damaraland*, p. 321 (1872); *Ayres, Ibis*, 1874, p. 105, 1878, p. 301; *Barratt, Ibis*, 1876, p. 213; *Butler, Feilden and Reid, Zool.* 1882, p. 426; *Sharpe ed. Layard's B. S. Afr.* p. 618 (1884); *W. Ayres, Ibis*, 1887, p. 62 [Rooi Rand]; *Sharpe, Cat. B. M.* xxiii, p. 150 (1894); *Shelley, B. Afr.* i, p. 177 (1896); *Woodward Bros. Ibis*, 1897, p. 401; *id. Natal B.* p. 169 (1899); *Marshall, Ibis*, 1900, p. 263; *Alexander, Ibis*, 1900, p. 444; *Reichenow, Vög. Afr.* i, p. 279 (1900).
Ortygometra nigra, *Fleck, Journ. Ornith.* 1894, p. 283.

FIG. 82.—Head of *Limnocorax niger*. $\times \frac{1}{2}$

Description. *Adult.*—General colour above and below black with a slight wash of slaty on the scapulars, wings and lower surface.

Iris and naked skin round eye bright red, bill greenish-yellow to dark green, legs bright red.

Length 7·75; wing 3·8; tail 1·5; culmen .95; tarsus 1·5.

The female is like the male; the nestling is covered with black down and the young is chocolate-brown instead of black, and ashy-grey below. Bill green; legs pale red.

Distribution.—The Black Crake is found over the greater part of Africa from the Gambia and the White Nile southwards to Cape Colony. In South Africa it appears to be generally distributed, where suitable localities exist, though owing to its skulking habits it has not been definitely recorded from many places.

The following is a list of localities: Cape Colony, Cape division, August (S. A. Mus.), Knysna (Marais), Port Elizabeth rare (Brown); Natal—near Durban, breeding August (Millar), Illovo River and

near Eshowe (Woodward), near Newcastle (Butler) ; Transvaal—Mooi River at Potchefstroom (Ayres), Rooi Rand in Zoutspansberg (W. Ayres), Lydenburg (S. A. Mus.) ; Bechuanaland—Lake Ngami (Andersson), Nocana (Fleck) ; Rhodesia—near Salisbury (Marshall), near Victoria Falls (S. A. Mus.) ; German South-west Africa—Otjimbinque, Schmelens Hope, Omanbonde and Okavango (Andersson) ; Portuguese East Africa—Tete (Peters).

Habits.—The Black Crake is found only in the reeds and rushes bordering the vleys and rivers ; it is shy and skulking, moving about quickly under covert and seldom showing itself ; consequently it appears to be rare and is seldom obtained. It has a curious characteristic note syllabled as “check check” by Marshall, and it swims well.

Mr. Millar, who has taken the eggs of this Crake, writes as follows : “On August 16th, 1902, at Clairmont, near Durban, I found a nest in the rushes floating on the water. It was composed of dry rushes and contained two eggs measuring $1\cdot3 \times 0\cdot9$. These are pointed at both ends, the ground colour being bright cream, minutely spotted with brown throughout, most thickly at the obtuse end.”

Mr. Austin Roberts has also found the eggs of this Crake near Potchefstroom. In this case the nest was about a foot above the water in a dense bed of rushes in a vlei. It was about nine inches across and six inches deep and composed of dry rushes. The eggs were four in number.

Genus VIII. GALLINULA.

Type.

Gallinula, Briss. *Orn.* vi. p. 3 (1760) G. chloropus.

Bill short and stout, the culmen shorter than the inner toe and claw ; a frontal shield, rounded posteriorly, at the base of the upper mandible ; nostrils elongated ovals in a distinct depression ; wings long and fairly well developed, the first primary longer than the longest secondaries which fall short of the longest primaries by more than the length of the hind toe ; tarsus distinctly shorter than the middle toe and claw ; toes with a narrow lateral membrane, but not webbed or lobed.

Some six species of Moorhens are included in this genus ; two of these are spread over the greater part of Africa and are included in our fauna.

Key of the Species.

- A. Size larger, wing over 6·0; the basal half of both mandibles red *G. chloropus*, p. 262.
- B. Size smaller, wing less than 6·0; no red on the lower mandible *G. angulata*, p. 264.

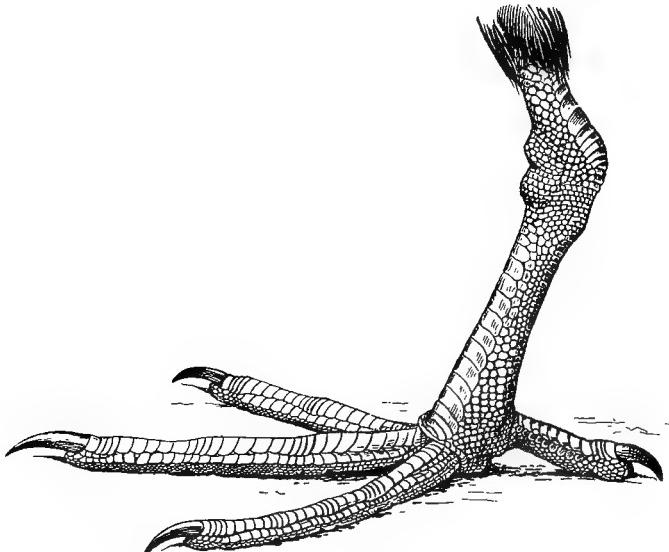


FIG. 83.—Left foot of *Gallinula chloropus*. $\times \frac{3}{4}$

681. *Gallinula chloropus*. Waterhen or Moorhen.

Fulica chloropus, Linn. *Syst. Nat.* 12th ed, i, p. 258 (1766).

Gallinula chloropus, Grill, *K. Vet. Akad. Handl. Stockh.* ii, No. 10, p. 54 (1858) [Oudtshoorn]; Gurney, *Ibis*, 1859, p. 249 [Natal]; Layard, *B. S. Afr.* p. 341 (1867); Gurney, in Andersson's *B. Damaral.* p. 323 (1872); Ayres, *Ibis*, 1874, p. 107; Barratt, *Ibis*, 1876, p. 213; Dresser, *B. Eur.* vii, p. 313, pl. 503 (1879); Sharpe, ed. Layard's *B. S. Afr.* p. 623 (1884); *id. Cat. B. M.* xxiii, p. 169 (1894); Fleck, *Journ. Ornith.* 1894, p. 384; Shelley, *B. Afr.* i, p. 175 (1896); Woodward Bros., *Natal B.* p. 170 (1899); Marshall, *Ibis*, 1900, p. 270; Reichenow, *Vög. Afr.* i, p. 294 (1900): Haagner, *Ibis*, 1902, p. 580.

"Rooi-bles Reit-haan" of the Dutch.

Description. Adult.—General colour throughout black, darkest on the head, slightly washed with olive on the back and wings,

becoming slaty on the lower surface; edge of the wing joint, outer edge of the bastard wing and of the first primary white; flanks strongly streaked with white and usually some white about the centre of the abdomen; feathers on the centre of the abdomen and central tail-coverts black; lateral ones white.

Iris reddish, frontal shield and the basal two-thirds of the bill lake-red, distal third greenish-yellow; legs olive-green with a garter just above the tarsal joint of dark lake-red.

Length 13·0; wing 6·20; tail 2·5; tarsus 1·95; culmen with frontal shield 1·65.

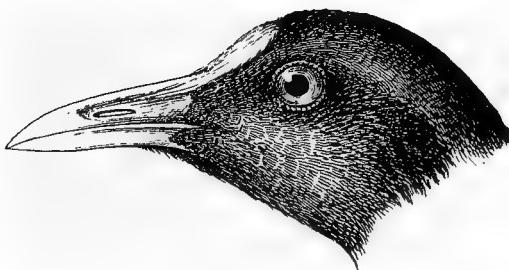


FIG. 84.—Head of *Gallinula chloropus*. $\times \frac{11}{12}$

The female is like the male, but the white streaks on the flanks are not generally so conspicuous and the frontal shield is not so well developed. A young bird is much browner than the adult, and there is a good deal of white about the chin and abdomen. Iris light brown; bill brown with very small frontal shield; legs greenish-yellow with a yellow garter. The nestling is clothed with black down.

Distribution.—The Moorhen is a widespread bird, ranging over the greater part of Europe, Asia and Africa, from England to Japan and Celebes in the one direction, and to Cape Colony and Madagascar in the other. In South Africa it is a resident throughout the greater part of the country wherever suitable conditions exist.

The following are localities: Cape Colony—Cape division, February to December (S. A. Mus.), Swellendam and Bredasdorp, November (Layard), Oudtshoorn (Victorin), Knysna, June (Marais in S. A. Mus.), Grahamstown (Atmore), Port Elizabeth, common (Brown), Orange River (Barratt); Natal—Umzinto River and along

the coast (Woodward); Transvaal—Mooi River at Potchefstroom, June to July (Ayres), Lydenburg and Pretoria (Barratt), near Johannesburg, scarce (Haagner); Bechuanaland—Tebra country near Lake Ngami, April (Eriksson); Rhodesia—Chirba River in Mashonaland (Marshall); German South-west Africa—throughout (Andersson), Okahandya (Fleck).

Habits.—Andersson gives an excellent account of the habits of the Moorhen in South Africa; it does not differ much in this respect from that of Europe, except that it appears to lay only from two to four eggs instead of from seven to nine. The Moorhen is found only in or about water; it swims and dives with great ease and dexterity; as it moves about the surface of the water it nods its head from side to side looking for insects and vegetable substances; it may sometimes be found away from water in the early morning or in the evening searching the grass for worms, slugs and insect larvæ which, together with the grasses and seeds, form its food. It occasionally takes to flight for a short distance, but usually prefers to escape into safety by running.

Eriksson found a nest on April 3rd in the Tebra country near Lake Ngami; it was constructed of water grasses and reeds, and was floating amongst the thickest rushes. The eggs were three in number of a buffy-brown colour freely speckled with small brown spots and a few larger ones of a darker shade of the same colour.

682. *Gallinula angulata*. *Lesser Moorhen.*

Gallinula angulata, Sundev. Oefvers. K. Vet. Akad. Forh. Stockh. 1850, p. 110; Layard, B. S. Afr. p. 342 (1867); Gurney, *Ibis*, 1868, p. 52 [Mooi River]; *id. in Andersson's B. Damara*, p. 321 (1872); Oates, *Matabeleland*, p. 324 (1881); Shelley, *Ibis*, 1882, p. 366 [Selenia Pan]; Sharpe, ed. Layard's B. S. Afr. p. 624 (1884); *id. Cat. B. M.* xxiii, p. 181, (1894); Shelley, *B. Afr.* i, p. 175 (1896); Reichenow, *Vög. Afr.* i, p. 295 (1900); Haagner, *Ibis*, 1902, p. 580.
Gallinula pumila, P. L. Sclater, *Ibis*, 1859, p. 249, pl. 7 [Natal]; Gurney, *Ibis*, 1864, p. 361; P. L. Sclater, *Ibis*, 1867, p. 254.

Description. *Adult Male.*—Crown of the head, neck all round and lower surface slaty, almost black on the crown, becoming slaty-grey on the breast; centre of the back strongly washed with olive-brown; band of the wing, bastard wing and first primary edged with white; tail black; flanks broadly streaked with white; median under tail-coverts black, lateral ones white.

Iris crimson; frontal shield and culmen bright red; rest of the

bill yellow; feet and toes grass green, sometimes flesh-coloured, tinged with light green.

Length 9·25; wing 5·4; tail 2·25; culmen and frontal shield 1·2; tarsus 1·55.

The females are lighter in colour and have a nearly white chin; the frontal shield also is not so bright and is tinged with orange at the base.

The young bird is much lighter than the adult, the crown and back is olive-brown; some of the inner secondaries are broadly margined with ochraceous-brown; lores and eyebrows, cheeks and chin, throat and breast ashy-white; a wash of brown on the fore-neck, flanks and under tail-coverts as in the adult. Iris yellow; bill greenish-yellow, the frontal shield and culmen black bordered with yellow.

Distribution.—The Lesser Moorhen is found throughout the greater part of Africa from Senegal and British East Africa southwards. Within our limits it appears to be chiefly met with north of the Orange River, as it has only once been noticed in Cape Colony and appears to be by no means abundant in Natal, though the type obtained by Wahlberg is stated to have come from "Lower Caffraria."

The following are recorded localities: Cape Colony—Swellendam (Layard in S. A. Mus.), Spaldings in Barkly West division, February (Ayres); Natal—Umschali lakes (Ayres); Transvaal—Mooi River at Potchefstroom (Ayres), near Johannesburg, scarce (Haagner); Bechuanaland—Selenia Pan, December (Ayres), Tebra country near Lake Ngami, February to April (Eriksson in S. A. Mus.); Rhodesia—Sakasusi River, February, and Tibakai's Pan, December, in Western Matabeleland (Oates); German South-west Africa—Ondonga, February to March (Andersson), Ondura in Ovampoland, March (Eriksson in S. A. Mus.).

Habits.—The Lesser Moorhen is very abundant in the northern part of Damaraland, and was found breeding there in great numbers by Andersson in February and March; Eriksson also met with it breeding in the Tebra country in February and in Ovampoland in March. The nest, according to the latter observer, is constructed of a mass of water grass floating amongst the thickest rushes; some of the standing stalks are bent downwards, forming the foundation; the hollow in which the eggs are laid is about three inches deep; while Andersson states that after the nest has been completed the bird binds the tops of the surrounding grasses and ties them

together above the nest to form a partial shelter against the sun and to afford concealment. The clutch usually consists of four eggs; three of these, preserved in the South African Museum, are oval-shaped like a hen's egg, and of a very pale brown ground colour, spotted and blotched with a darker rufous-brown most thickly at the obtuse end; they measure 1·71 × 1·21.

Genus IX. PORPHYRIO.

Type.

- Porphyrio**, Briss. *Orn.* v. p. 522 (1760) *P. madagascariensis*.
Porphyriola, Sund. *Av. Tent.* p. 131 (1872) *P. allenii*.

Bill short, high and rather compressed; frontal shield well developed; nostrils oval or round; wings rather short and rounded, the first primary about equal to the secondaries; toes long, the middle one with its claw exceeding the tarsus in length; no lateral membrane or lobes to the toes; plumage bright blue and green.

Some seventeen species of this genus are known; they are spread over Africa and Madagascar, Southern Europe and Asia, Australia, New Zealand and the Pacific Islands. Two occur in South Africa.

Key of the Species.

- A. Larger, wing over 9·0; nostrils rounded... *P. madagascariensis*, p. 266.
B. Smaller, wing under 6·0; nostrils oval ... *P. allenii*, p. 268.

683. **Porphyrio madagascariensis.** *King Reed Hen.*

Fulica porphyrio, Linn. *Syst. Nat.* 12th ed. i, p. 258 (1766).

Gallinula madagascariensis, Lath. *Ind. Orn. Suppl.* p. 68 (1801).

Porphyrio smaragnotus, Temm., *Man. Ornith.* ii, p. 700 (1820); Gurney, *Ibis*, 1859, p. 249 [Natal]; *id. in Andersson's B. Dammaral.* p. 325 (1872); Ayres, *Ibis*, 1874, p. 105; Drösser, *B. Eur.* vii, p. 308, pl. 501 (1876); Butler, *Feilden & Reid, Zool.* 1882, p. 426.

Porphyrio erythropus, Stephens, *Gcnl. Zool.* xii, pt. 1, p. 255 (1824); Layard, *B. S. Afr.* p. 341 (1867).

Porphyrio smaragdonotus, Gurney, *Ibis*, 1868, p. 469 [Natal]; Ayres, *Ibis*, 1880, p. 271; Sharpe, *ed. Layard's B. S. Afr.* p. 619 (1884); Symonds, *Ibis*, 1887, p. 384; Bryden, *Gun and Camera*, p. 408 (1893); Fleck, *Journ. Ornith.* 1894, p. 383.

Porphyrio porphyrio, Sharpe, *Cat. B. M.* xxiii, p. 195 (1894); Shelley, *B. Afr.* i, p. 175 (1896); Woodward Bros. *Natal B.* p. 170 (1898); Reichenow, *Vög. Afr.* i, p. 290 (1900).

"Koning-Reit-Haan" of the Dutch.

Description. Adult Male.—Centre of the back, some of the inner secondaries, scapulars and upper tail-coverts olive-green, tail rather darker; back of the head and neck, wing-coverts, breast, flanks, thighs and abdomen a rich purplish-blue; primaries dusky, edged with blue; sides of the head, throat and upper breast azure blue; under tail-coverts pure white.

Iris red; bill and frontal shield crimson-red with the tip and the lower portion of the lower mandible red-brown; legs rose-pink.

Length about 18·0; wings 9·35; tail 3·25; tarsus 3·6; middle toe 4·25; culmen and frontal shield 2·6.

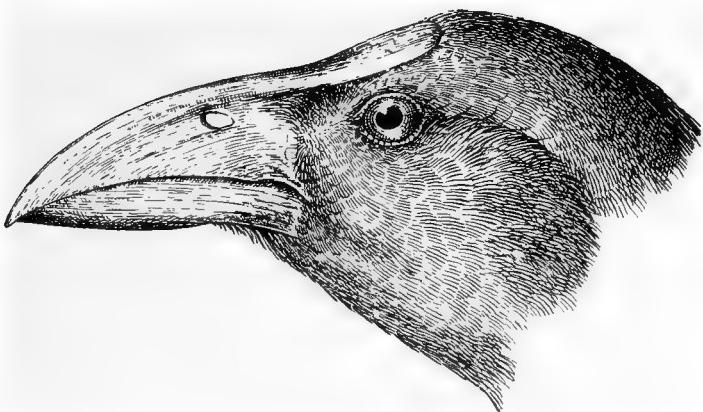


FIG. 85.—Head of *Porphyrio madagascariensis*. $\times \frac{1}{2}$

The female resembles the male, but is perhaps a trifle smaller; a young bird only differs from the adult in being duller in colour throughout.

Distribution.—This handsome bird is spread over the greater part of Africa and Madagascar ranging northwards to Egypt, and even occasionally to Southern Europe. Throughout South Africa it is widely distributed wherever suitable conditions are found, from the neighbourhood of Cape Town, where it is far from uncommon, to the Cunene. It has not hitherto been noticed in Rhodesia, though doubtless it will eventually be found there.

The following are localities: Cape Colony—Cape, Bredasdorp, and Knysna divisions (S. A. Mus.), Berg River (Layard), Uitenhage (Rickard); Natal—Zeekoe Lake, near Durban (Woodward), Newcastle (Butler), Upper Tugela Valley (Stark), Zululand (Bt. Mus.);

Orange River Colony—Kroonstad (Symonds); Transvaal—Potchef-stroom (Ayres); Bechuanaland—Botletli River (Bryden), Nocana, near Lake Ngami (Fleck); German South-west Africa—Oman-bonde, Ondonga and Okavango River (Andersson).

Habits.—The King Reed Hen is found in vleis and swamps where there is plenty of rushes and reeds, among which it lies concealed during the greater part of the day. In the early morning and the evening it may sometimes be seen in the open searching for its food. This consists, according to Andersson, of the seeds of aquatic plants, small fresh water snails and fish eggs, though Ayres and other observers state that the contents of the stomachs examined by them were entirely of vegetable origin—shoots and seeds of reeds and other water plants. Like most birds of this family it is a poor flyer and is seldom flushed, but on the other hand it runs and dives with great ease and rapidity. Its note, according to Ayres, is quaint and unmusical. Layard found it nesting among the reeds on the Berg River, and states that the clutch consists of from six to ten eggs. Stark found two nests close to the Tugela River in Natal, about twenty-five miles from its source, on October 12th. They were placed in a vlei of about twenty acres in extent in the middle of a clump of reeds, where they were not very thick, about fifty yards from the shore in water about three feet deep. The half dead reeds in the centre of the clump had been broken down, and on them the nest of reed stems lined with fine dry grass was built. It was not very large or compact, the top being about nine inches above the level of the water and about nine or ten inches across; the hollow on the top where the eggs lay was very slight; the eggs were three in number in one case and four in the other, and were considerably incubated.

Eggs in the South African Museum, obtained, probably from the Berg River, by Mr. Layard, are ovals, somewhat elongated and pointed: they are pale brown, not very thickly spotted with fine points and larger irregular blotches of darker purplish and rufous brown. They measure about $2\cdot2 \times 1\cdot48$.

684. *Porphyrio allenii*. *Allen's Reed Hen.*

Porphyrio allenii, Thompson, *Ann. Mag. N. H.* x. p. 204 (1842); Gurney, in Andersson's *B. Damara*, p. 327 (1872); Dresser, *B. Eur.* vii, p. 307, pl. 502 (1880); Sharpe, ed. Layard's *B. S. Afr.* p. 621 (1884); Ayres, *Ibis*, 1885, p. 346; Shelley, *B. Afr.* i, p. 175 (1896); Marshall, *Ibis*, 1900, p. 270; Reichenow, *Vög. Afr.* i, p. 292 (1900).

Porphyriola allenii, Sharpe, *Cat. B. M.* xxiii, p. 187 (1894); Oates, *Cat. B. Eggs*, i, p. 126 (1901).

Description. *Adult.*—General colour above an oily olive green becoming dusky on the rump and upper tail-coverts ; primaries dusky, the outer one edged with dirty white, the others with bluish-green ; head blackish with a purple gloss ; the feathers of the under surface of the body purplish tipped with pale fulvous, giving a somewhat mottled appearance to that part, chin and centre of breast and abdomen paler, almost pure white ; under tail-coverts white, axillaries black.

Iris red, bill reddish-brown, frontal shield dusky, legs crimson-red.

Length about 10·0 ; wing 5·75 ; tail 2·25 ; tarsus 2·05 ; middle toe 2·5 ; culmen 2·45.

A young bird has the crown of the head reddish-brown, the feathers of the back and wing-coverts margined with dark ochraceous ; the sides of the head and lower surface are deep ochraceous buff, becoming darker on the flanks and under tail-coverts, and paler on the chin and centre of the breast and abdomen.

Distribution.—Allen's Reed Hen is found throughout the greater part of Africa (including Madagascar), from Senegal and Abyssinia southwards ; it has occasionally even been met with in southern Europe. It is a very rare bird in South Africa, and has only been once found south of the Vaal River ;* the following are the recorded occurrences : Cape Colony—Knysna, July (Marais) ; Transvaal—Hex River near Rustenburg, December (Lucas) ; Bechuanaland—Tebra country, near Lake Ngami, April (Eriksson in S. A. Mus.) ; Rhodesia—Gwibi River, near Salisbury, December (Marshall) ; German South-west Africa—Ondonga, February (Andersson) ; Portuguese East Africa—Tete (Peters).

Genus X. **FULICA.**

Type.

Fulica, Brisson, *Orn.* vi, p. 23 (1760) F. atra.

Bill stout and somewhat compressed, culmen with a large frontal shield about two-thirds of the length of the middle toe ; nostrils elongated ovals ; wings short and rounded, the first primary about as long as the secondaries ; tarsus markedly shorter than the middle toe without claw, provided posteriorly with a membranous ridge or

* Mr. J. G. Brown informs me that this bird is rare near Port Elizabeth ; while the South African Museum has recently received an example shot near Towns River Station, in August last, by Dr. A. H. B. Kirkman.

fringe; toes long, with a series of lateral membranous lobes on either side corresponding to the individual phalanges.

This well-marked genus contains the Coots, some thirteen species of which are scattered all over the world. One of these is commonly found in South Africa.

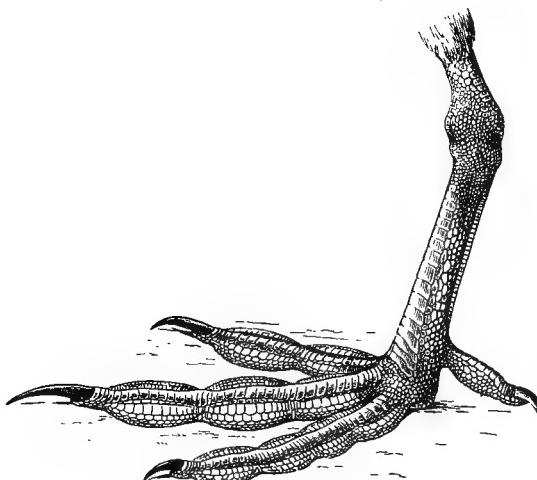


FIG. 86.—Left foot of *Fulica cristata*. $\times \frac{1}{2}$

A Coot in the South African Museum, obtained near Durban on February 2nd, 1901, by Mr. T. D. Butler, the collector, is apparently referable to *Fulica americana*, the White-rumped Coot of North and Central America. I have hesitated before admitting the species to our South African list, as it rests on one record only, which may possibly be due to some mistake in labelling, but I think this unlikely, and perhaps more examples may be discovered. It can easily be distinguished from the Red-knobbed Coot by its white under tail-coverts, and by the white tips to the inner secondaries.

685. *Fulica cristata*. *Red-knobbed Coot.*

Fulica cristata, Gmel., *Syst. Nat.* i., p. 704 (1788); *Gurney, Ibis*, 1862, p. 153 [Natal], 1868, pp. 261, 470 [Transvaal]; P. L. Sclater, *P. Z. S.*, 1866, p. 23 [Catheart]; Layard, *B. S. Afr.* p. 343 (1867); Pelzeln, *Novara Reise, Vögel*, p. 135 (1865); *Gurney, in Andersson's B. Dammaral.* p. 327 (1872); Ayres, *Ibis*, 1874, p. 105, 1885, p. 347; Buckley, *Ibis*, 1874, p. 389; Barratt, *Ibis*, 1876, p. 213;

Dresser, *B. Eur.* vii, p. 323, pl. 504, fig. 1 (1879); Oates, *Matabeleland*, p. 324 (1881); Holub & Pelz., *Orn. Süd-Afr.* p. 295 (1882); Butler, *Feilden & Reid, Zool.* 1882, p. 426; Sharpe ed. *Layard's B. S. Afr.* p. 621 (1884); Bryden, *Gun & Camera*, p. 349 (1893); Sharpe, *Cat. B. M.* xxiii, p. 215 (1894); Fleck, *Journ. Ornith.* 1894, p. 383; Shelley, *B. Afr.* i, p. 175 (1896); Woodward Bros., *Natal B.* p. 171 (1899); Reichenow, *Vög. Afr.* i, p. 296 (1900); Oates, *Cat. B. Eggs*, i, p. 180 (1901); Haagner, *Ibis*, 1902, pp. 574, 580; Whitehead, *Ibis*, 1903, p. 285; Sharpe, *Ibis*, 1904, p. 8 [Deelfontein].

Description. Adult Male.—General colour throughout ashy, becoming black on the head, neck and under tail-coverts, and greyish-ashy on the abdomen.

Iris red; bill and frontal shield light blue; the two rounded fleshy knobs at its posterior edge reddish-brown to crimson; legs very dark green.

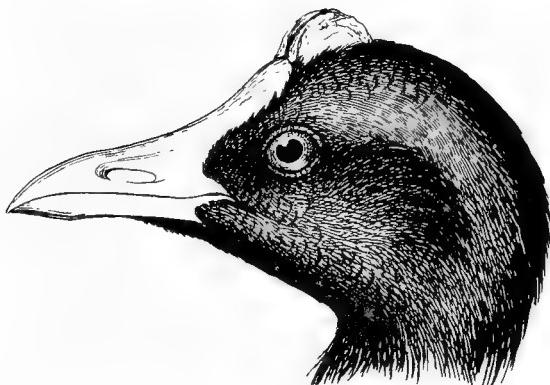


FIG. 87.—Head of *Fulica cristata*. $\times \frac{1}{2}$

Length about 16·0, in flesh 15·75; wing 8·0; tail 2·0; tarsus 2·45; middle toe 3·80; culmen 2·4.

The female resembles the male in plumage and does not appear to differ in dimensions.

A young bird is ashy-brown above, with white edges to some of the feathers of the head and neck; the lores, cheeks and throat are white; bill dusky, ashy-whitish at tip; iris light ashy-brown; the fleshy knobs on the frontal shield are not nearly so large.

A very curious pied variety, obtained in the neighbourhood of Cape Town, by Mr. H. H. Hill and preserved in the South African Museum, has the sides of the head and neck, chin and throat, a

patch in the centre of the breast, the primaries and some of their coverts and a few feathers in the upper and lower tail-coverts white; the legs, too, are quite pale; the rest of the coloration is normal. The complete symmetry of the albinistic patches would at first lead one to the conclusion that this was an entirely different bird, but there can be little doubt that it is merely a partial albino.

Distribution.—The Red-knobbed Coot is closely allied to the common English Coot, differing only in the possession of a pair of rounded, knob-like excrescences, which are placed at the hinder edge of the frontal shield.

The present species is spread over North, East and South Africa and Madagascar, but does not appear to be known in West Africa. It crosses the Mediterranean into Spain, where it has been found breeding. In South Africa it appears to be generally distributed in suitable situations. The following are recorded localities: Cape Colony—Cape division, September, Worcester division, December, and Knysna, September, November (S.A. Mus.), Port Elizabeth (Rickard), Deelfontein (Seimund), Orange River, near Aliwal North (Whitehead); Natal—Durban (Bt. Mus.), near Newcastle (Butler); Orange River Colony—Rhenoster River (Ayres); Transvaal—Mooi River at Potchefstroom and near Pretoria (Barratt), near Johannesburg, common (Haagner); Bechuanaland—Botletli River (Bryden), near Lake Ngami, August (Fleck); German South-west Africa—Ondonga, December (Andersson), Omuramba and Rietfontein (Fleck); Rhodesia—Feira on the Zambesi (Stoehr, in S.A. Mus.)

Habits.—The Red-knobbed Coot is one of the commonest of South African water-birds; it is found on all open sheets of water and also on rivers, generally in small companies, sometimes with wild ducks of various species. It feeds in the morning and evening, often travelling some distance from its usual haunts; water-weeds, seeds of various aquatic plants and insects form its diet; unlike most of the Rail family it is a good flyer, notwithstanding the shortness of its wings, and when disturbed, will often take to flight for a considerable distance. It is also an expert swimmer and diver; Layard has observed it swimming on the waters of Table Bay when there was a considerable swell.

The nesting habits of the Red-knobbed Coot have been noticed by many South African observers. The nest is formed of reeds and other water plants, roughly but firmly woven together, and floats amongst the rushes, a foundation being sometimes made of a few

old reed stalks. It is raised only a few inches above the water line and contains from three to seven eggs. Butler found nests in September and October near Newcastle containing from five to seven eggs ; Eriksson, in April, near Lake Ngami, found nests with five, while Layard gives the number of eggs as five. These closely resemble those of the European bird ; they are greyish-white freely speckled with small spots and blotches of very dark brown ; in shape they are fairly regular ovals ; they measure 2·23 to 2·05 × 1·50 to 1·45. The young birds are covered with black down and swim and dive with their parents as soon as they are hatched, sometimes even with bits of shell clinging to them.

Contrary to what one would expect Mr. Bryden found this Coot excellent eating.

Family II. HELIORNITHIDÆ.

No aftershaft to the contour feathers ; seventeen cervical vertebræ ; eighteen rectrices ; the accessory semitendinosus muscle absent ; plantar flexors peculiar, both the tendons dividing into three branches and distributed to three anterior digits before uniting, while the slip to the hallux is given off by the flexor longus hallucis previously ; this is the case in *Heliornis* ; in *Podica* the conditions are unknown.

This family contains three genera, from Africa, South Eastern Asia and South America respectively.

Genus I. PODICA.

Type.

Podica, *Less., Traité d'Orn.* p. 596 (1831) *P. senegalensis*.

Bill long and somewhat slender, the culmen about equal to the outer toe without the claw ; nostrils elongate ovals and pervious ; no frontal shield ; wings of moderate length, the first primary about equal to the secondaries, the third primary the longest ; tail of eighteen feathers, rectrices narrow, pointed, ribbed and stiff, much graduated, the longest about three-quarters the length of the wing ; feet much as in *Fulica*, the tarsus considerably shorter than the middle toe, produced behind into a thickened marginal membrane ; toes with lateral marginal expansions corresponding to the phalanges ; claw of the middle toe pectinated along the inner edge.

Three species of this curious genus are known ; all are confined to the Ethiopian Region, and only one is found within our limits.

686. *Podica petersi*. Peters' Fin-foot.

Podica petersi, Hartl., *Abhandl. Nat. Ver. Hamb.* ii, p. 62 (1852); Gurney, *Ibis*, 1859, p. 250, 1860, p. 206 [Natal]; Finsch & Hartlaub, *Vög. Ost-Afr.* p. 790 (1870); Shelley, *Ibis*, 1882, p. 367 [Rustenburg]; Sharpe, ed. *Layard's B. S. Afr.* p. 625, pl. xii (1884); *id.*

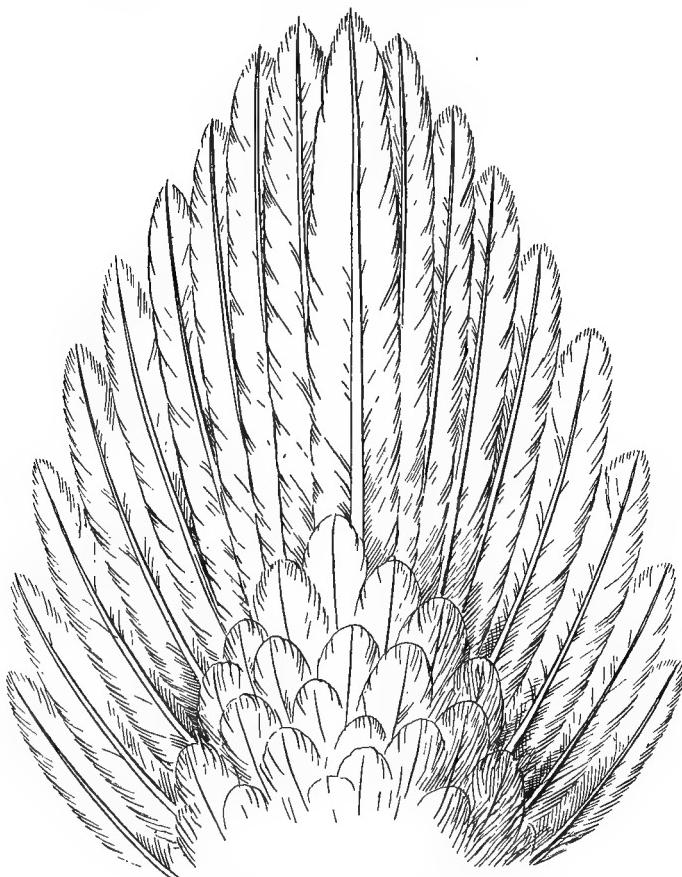


FIG. 88.—Tail of *Podica petersi*. $\times \frac{2}{3}$

Cat. B. M. xxiii, p. 231 (1894); *Shelley, B. Afr.* i, p. 175 (1896); *Woodward Bros., Natal B.* p. 171 (1899); *Shortridge, Ibis*, 1904, p. 202.

Podica mossambicana, Peters, *Ber. Verh. Akad. Berlin*, 1853, p. 783; *Layard, B. S. Afr.* p. 375 (1867); *id. Ibis*, 1869, p. 77.

Podica senegalensis, Reichenow, Vög. Afr. i, p. 298 (1900) [in part].
“Sun-Grebe” or “Water Treader” of some authors.

Description. *Adult Male.*—General colour above dark brown becoming quite black on the crown, back of the neck and tail-feathers; mantle feathers and some of the lesser coverts with sub-terminal rounded white spots; sides of the face including the ear-coverts, chin and neck below, bluish grey; rest of the lower surface white with a fulvous tinge, the fore-neck black, mottled with white, the sides of the breast, flanks, thighs and under tail-coverts, mottled and barred with fulvous brown; under wing-coverts spotted with white.

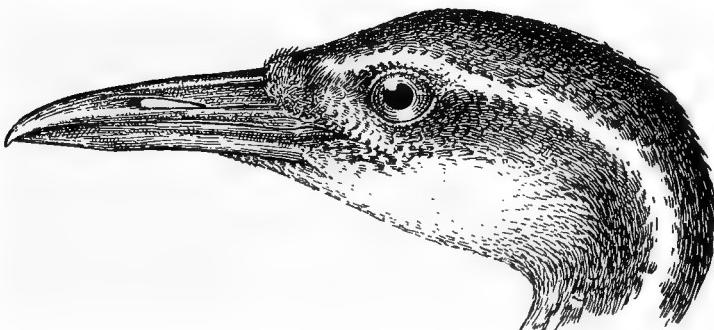


FIG. 89.—Head of *Podica petersi*, ♀. $\times \frac{5}{4}$

Iris hazel; bill orange-red, darker along the culmen; legs orange-red.

Length about 27·0; wing 9·50; tail 7·5; tarsus 2·0; middle toe and claw 3·12; culmen 2·10.

The female is smaller, and has a white eyebrow and a distinct white line running down the neck on either side from behind the eye; the chin is white and separated from the lateral white stripe by a dark grey stripe, the lower part of the neck and fore-neck is mottled black and white.

Iris pale yellow; wing 8·0; tarsus 1·87; culmen 1·80.

There are six examples of this species in the South African Museum, all from the eastern portion of the Colony; two of these are females, three are males, one is probably a male, judging by its wings. All these, with the exception of the last named, have the white line down the side of the neck and are in the state of

plumage described above as that of the female; while the example not sexed, which was obtained in the district of Bathurst, is in the plumage described above as that of an adult male. I am inclined to think that this is a breeding dress rather than an adult plumage, and that the three males with white lateral neck stripes are not necessarily young birds, but merely adult males in non-breeding plumage. The only dated examples are those obtained by Mr. Shortridge on the St. John's River on December 18th and 26th.

Dr. Reichenow has united our South African bird to the West African *P. senegalensis*; I think it would be as well to keep the two separate until we know a little more about the changes of plumage, which are very puzzling.

Distribution.—Peters' Fin-foot is found in South-east Africa, from the eastern half of Cape Colony northwards through Natal and the Transvaal, as far as Zanzibar on the east coast and as the lower reaches of the Congo on the west. Should the West African form (*P. senegalensis*) be proved to be identical, its range will be extended to Senegal. Mr. Layard believes that he saw this bird on two occasions on the Berg River and also on the Zonder Einde River in Caledon, both in the western half of Cape Colony, but hitherto no confirmation of these occurrences has been made.

The following are recorded South African localities: Cape Colony—Kariega river in Albany (Layard), Bathurst division, Buffalo river at East London, St. John's River in Pondoland, December to March (S. A. Mus.); Natal—near Maritzburg (Fitzsimmons); Transvaal—Elands River at Rustenburg, May (Ayres).

Habits.—The Fin-foot is a retiring bird, seldom met with, both on account of its rarity and shyness; it frequents rivers, where it may be seen swimming with only the head and neck visible above the water; when disturbed it will rise with some difficulty from the water and fly along the surface aided by its feet (hence the name "Water treader") and take refuge under the bank; sometimes it perches on the lower branches of trees overhanging the water. The food consists of fishes and fresh water mollusca, while Ayres found frog bones and quartz pebbles in the stomach of an individual examined by him; he further states that he caught two of these birds in traps set for otters; when taken from the traps they made an extraordinary noise like the growling of a wild beast, and were very savage. Nothing is known of this bird's breeding habits.

Order XV. ALECTORIDES.

This Order contains the Cranes and their allies, to which, in accordance with Garrod's views, the Bustards have been added. It would perhaps have been more consistent with morphological facts to separate the latter as a distinct Order, intermediate between the Cranes and the Wading birds, but I have preferred to follow the scheme adopted in the Catalogue of Birds of the British Museum in this respect.

In the members of this Order the skull is schizognathous; the angle of the mandible is truncated and not produced; there is no ectepicondylar process to the humerus, and the hind toe, when present, is, in all the South African genera, jointed on a level above the others.

The South African representatives of this order are all referable to the two principal Families—*Gruidæ* and *Otidæ*. There are five other small Families as well, containing aberrant forms of Cranes not represented in our fauna.

Key of the Genera.

- A. With a well developed hind toe.
 - a. Without a tuft of straw-like bristles on the nape, nostrils linear.
 - a¹. Fore part of cheeks bare with fleshy wattles; a pair of feathered lappets on the throat *Bugeranus*, p. 278.
 - b¹. Fore part of cheeks feathered without wattles; ear-coverts and nape with a thick mass of decomposed plumes *Tetrapteryx*, p. 281.
 - b. A tuft of straw-like bristles on the nape; nostrils oblique ovals *Balearica*, p. 283.
- B. Three toes only, hind toe absent *Otis*, p. 288.

Family I. GRUIDÆ.

The Cranes are large birds with long legs and necks; the bill is also long, generally exceeding the length of the head; there are twelve tail-feathers and eleven primaries, and the trachea is generally convoluted and packed away to a hollow space formed between the walls of the keel of the sternum.

The Cranes are externally not unlike the Storks, with which

they were formerly often associated, but they differ very essentially in internal structure; externally the Cranes may be distinguished by a depression extending along the greater part of the upper mandible, in which is situated the nostril, shut in by a large membrane on the posterior side. In the Storks this groove is absent, and the nostrils are nearer the base of the bill.

The chief anatomical characters of the Family are as follows: Skull schizognathous and schizorhinal; no basipterygoid processes; sternum without notches posteriorly; aftershaft present; fifth cubital remex absent; oil gland present and tufted; cæca long; all five Garrodian thigh muscles usually present (femorocaudal and accessory femorocaudal absent in *Balearica*); flexor tendons galline.

Genus I. BUGERANUS.

Type.

Bugeranus, *Gloger, Handb. Naturg.* p. 440 (1842). *B. carunculatus*.

Bill long and pointed, longer than the middle toe and claw; nostrils linear ovals; crown, sides of the face and ear-coverts feathered, fore part of the cheeks and base of the bill naked, covered with fleshy caruncles or warts; on both sides of the throat, just below the eye, a feathered lappet, more or less developed; feathers at the base of the neck and inner secondaries elongated and lanceolate, the latter extending considerably beyond the end of the tail; tail of twelve feathers; lower half of shank and the whole of the tarsus bare; hind toe present, short, jointed above the level of the other toes.

Only the one species here described is assigned to this genus, which is restricted to South and East Africa.

687. **Bugeranus carunculatus.** *Wattled Crane.*

Ardea carunculata, *Gmel., Syst. Nat.* i, p. 643 (1788).

Grus carunculata, *Gray, Gen. Eds.* iii, p. 552, pl. 148 (1849); *Gurney, Ibis*, 1864, p. 355 [Natal]; *Layard, B. S. Afr.* p. 302 (1867); *Gurney, Ibis*, 1868, p. 467; *Tegetmeier, ed. Blyth's Monogr. Cranes*, p. 33, (1881); *Holub & Pelzeln, Orn. Sud-Afr.* p. 247 (1882); *Shelley, Ibis*, 1882, p. 363 [Mashonaland]; *Sharpe, ed. Layard's B. S. Afr.* p. 626 (1884); *Fleck, Journ. Ornith.* 1894, p. 385; *Shelley, B. Afr.* i, p. 186 (1896).

Bugeranus carunculatus, *Gurney in Andersson's B. Damara*, p. 278 (1872); *Sharpe, Cat. B. M.* xxiii, p. 267 (1894); *Woodward Bros.*

Natal B. p. 172 (1899); *Marshall, Ibis*, 1900, p. 268; *Reichenow, Vög. Afr.* i. p. 262 (1900); *Oates, Cat. B. Eggs*, ii, pp. 94, 370 (1902). *Laomedontia carunculata*, *Butler, Feilden and Reid, Zool.* 1882, p. 342. "Wattled," "Bell," or sometimes "Kaffir Crane" of Colonists; "Igwampi" of Amaxosa (Stanford).

Description. *Adult.*—Crown of the head dark slate, sharply demarcated from the white of the cheeks; throat and neck all round also white, extending down to the upper part of the breast, where the white feathers form long overhanging plumes; mantle slaty-black, becoming silvery-grey on the scapulars and wing-coverts; primaries and secondaries, tail-coverts and tail black; the inner secondaries elongated and produced to beyond the level of the tail; below black throughout. Sides of the face from in front of and below the eye

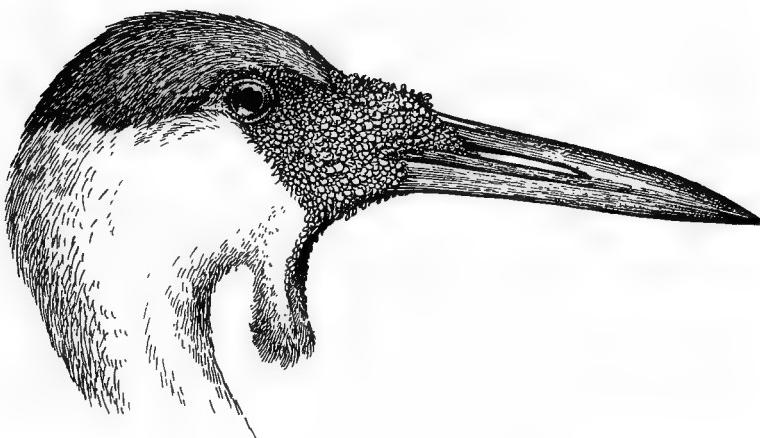


FIG. 90.—Head of *Bugeranus carunculatus*. $\times \frac{1}{3}$

naked; this together with the base of the beak as far forward as the nostrils covered with little rounded warts; below the eye on the throat two flat lappets bare along the anterior edge, clothed behind with white feathers.

Iris orange-yellow, bill light reddish-brown, warty skin at its base dull red, legs and toes black.

Length about 56·0; wing 26·5, to end of longest secondaries 34·0; tail 11·0; culmen 7·0; tarsus 12·0; middle toe 5.

A younger bird in the South African Museum has the skin at the side of the face merely corrugated, while the chin-lappets are

hardly developed at all ; the crown of the head is mingled slaty and white. The female, like the young male, has the crown almost pure white and very little traces of warty structure at the sides of the face.

Distribution.—This is the largest and certainly the rarest of South African Cranes ; it is widely distributed about the Colony, the upland half of Natal and over Damaraland and Mashonaland ; though not yet recorded from the Transvaal, so far as I am aware, it almost certainly occurs there. Beyond our limits it reaches Benguela on the west coast, and Somaliland on the east coast of Africa.

The following are localities : Cape Colony—Somerset West in the Stellenbosch division, and Caledon, July (S. A. Mus.), Cradock (Holub), East London (Rickard); Natal—Upper Mooi River in Estcourt county (Hutchinson), Newcastle (Butler); Bechuanaland—Ngami region (Andersson and Fleck); Rhodesia—Mashonaland, (Ayres and Marshall); German South-west Africa—rare in Damaraland, Okavango River (Andersson).

Habits.—This handsome and stately bird is usually found in pairs, sometimes in small family parties, in open country where there is plenty of swamp and moisture. It is usually a resident, and each pair of birds occupies a defined district, returning to nest in the same spot each year. In Damaraland, however, Andersson states that it is only found during the rainy season. Reptiles, fishes, frogs and insects form the greater part of its diet, but it also eats grain and is stated to ravage the mealie fields before the crops are ripe in the summer in Natal. The note is a grating and guttural one.

Mr. Graham Hutchinson found a nest of this Crane on a small rock in the middle of a stream, a tributary of the Upper Mooi River in the upper part of Natal. The nest was a large one, and was built up from the rock which was just under water, to a height of about two feet. It contained one egg. Gurney received an account of a nest from a correspondent, Mr. G. A. Phillips. In this case it was about five feet in diameter and of conical form, composed of rushes pulled up by the birds and placed in water about five feet deep in a large lagoon near the Vaal River. Two eggs, the usual clutch, contained in the nest, were on the point of hatching.

Two eggs, preserved in the South African Museum, probably those described by Layard as having been taken by Mr. Hugo, are oval, pale olive-brown and faintly blotched or clouded with a darker brown ; they measure 4·2 × 2·65 and 4·05 × 2·70 respectively.

Genus II. TETRAPTERYX.

	<i>Type.</i>
Tetrapteryx , Thunb., <i>K. Vet. Akad. Handl. Stockh.</i> 1818, p. 242	T. paradisea.

Bill long and pointed, but not so long as in *Bugeranus*, about equal to the middle toe and claw; nostrils linear ovals; the whole of the head including the fore part of the cheeks feathered, the ear-coverts and nape with a thick dense mass of decomposed plumes; feathers at the base of the neck and also the inner secondaries lanceolate and elongated, the latter extending considerably beyond the end of the tail feathers; tail, legs and feet as in *Bugeranus*.

This genus contains only one species confined to South Africa.

688. **Tetrapteryx paradisea.** *Blue Crane.*

Ardea paradisea, *Licht.*, *Cat. Rer. Rariss. Hamb.* p. 28 (1793).

Anthropoides stanleyanus, *Vigors, Zool. Journ.* ii, p. 234, pl. 8 (1826); *Layard, B. S. Afr.* p. 303 (1867); *id. Ibis*, 1869, p. 376; *Ayres, Ibis*, 1869, p. 300, 1871, p. 269; *Barratt, Ibis*, 1876, pp. 191, 209.

Grus paradisea, *Grill, K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 54 (1858); *Finsch & Hartl, Vög. Ost-Afr.* p. 671 (1870); *Tegetmeier, ed. Blyth's Monogr. Cranes*, p. 23, pl. i, fig. 1, (1881); *Shelley, Ibis*, 1882, p. 363 [Mashonaland]; *Butler, Feilden and Reid, Zool.* 1882, p. 342; *Shelley, B. Afr.* i, p. 186 (1896).

Anthropoides paradisea, *Sharpe, ed. Layard's B. S. Afr.* p. 628 (1884); *Reichenow, Vög. Afr.* i, p. 268 (1900).

Tetrapteryx paradisea, *Gurney, in Andersson's B. Damaral.* p. 278 (1872); *Buckley, Ibis*, 1874, p. 389; *Holub & Pelz., Orn. Süd-Afr.* p. 248 (1882); *Sharpe, Cat. B. M.* xxiii, p. 268 (1894); *Woodward Bros., Natal B.* p. 174 (1899); *Marshall, Ibis*, 1900, p. 263; *Harris, Essays and Photos.*, p. 138 (1901); *Oates, Cat. B. Eggs*, ii, pp. 95, 370 (1902); *Sharpe, Ibis*, 1904, p. 16 [Deelfontein].

"Stanley Crane" of some authors; "Indwe" of Amaxosa (Stanford).

Description. Adult Male. — General colour above and below pearly-grey, becoming a little darker about the back of the head and top of the neck where the feathers are thick, dense and decomposed; crown of the head quite white, the feathers at the base of the neck elongated, and attenuated and pendant over the breast; primary quills and their coverts slaty-grey, darker than the back; secondaries, especially the innermost, elongate and extending far beyond the tail; these become quite black towards the tip; tail short and darkening to almost black towards the tip.

Iris very dark brown; bill pale ochre with a pinkish tinge; legs and feet black.

Length to end of tail about 48·0; wing 23·0, to end of longest secondaries 40·0; tail 8·5; culmen 3·5; tarsus 8·5; middle toe and claw 3·6.

The female is smaller: length about 43·0; culmen 3·25, according to Butler.

Young birds are lighter uniform grey, are without the long black secondaries and have the top of the head light chestnut.

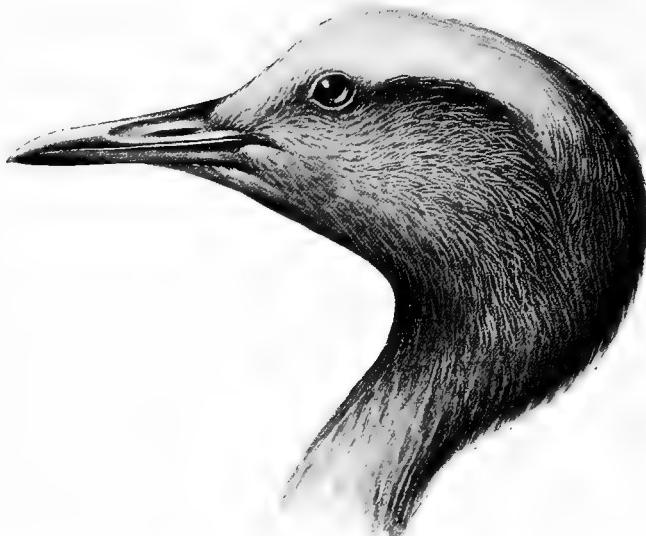


FIG. 91.—Head of *Tetrapteryx paradisea*. $\times \frac{2}{5}$

Distribution.—The Blue Crane, so far as our present knowledge goes, is confined to Africa south of the Zambesi; it is most abundant on the high veld plateau which occupies the greater part of the centre of South Africa, from the central plains of the Colony to Pretoria; but it is found beyond these limits towards the sea, though not apparently on the coast lands of Natal and Zululand.

The following are recorded localities: Cape Colony—Berg River (S. A. Mus.), Nelspoort in Beaufort West (Layard), Deelfontein, common (Seimund), Hope Town (Trimen), Colesberg (Atmore), Mossel Bay (Victorin), Knysna (Layard and Harris), Port Elizabeth

(Rickard), King William's Town (Trevelyan); Natal—near Newcastle (Butler); Orange River Colony—near Bloemfontein (Barratt), near Lindley, breeding December (Sparrow); Transvaal—Potchefstroom and Bloemhof district (Ayres); Mashonaland (Ayres and Marshall); Damaraland and Great Namaqualand during the rainy season (Andersson).

Habits.—The Blue Crane is certainly the most common of South African Cranes. It is most abundant on the open plains of the high veld, and is generally met with not far from water. During the breeding season it is to be seen in pairs, but later on in the winter in considerable flocks sometimes of as many as fifty birds. Its food consists of small reptiles, fishes and large insects, especially locusts and grasshoppers, but it also eats roots and seeds as well, and often frequents cultivated ground to feed on grain. In captivity it will take almost anything offered to it. Its voice is a very curious, far-reaching, guttural croak, very easily recognisable if once heard. It is wary and difficult to approach, and cannot be easily secured except with a rifle. Holub states that it spends the night knee-deep in water, while Ortlepp asserts that it is even sometimes frozen in in winter.

Major Sparrow informs me that this Crane makes no nest, but deposits its egg in the short grass of the bare veld. He found two clutches near Lindley in the Orange River Colony, one of two eggs, one of one egg, both in the month of December. In the following year he found two chicks just hatched near Newcastle on December 3rd, and one hard set egg next day near Dannhauser.

Eggs in the South African Museum are smaller than those of the Wattled Crane, and are a good deal darker; they are light brown, clouded and blotched with a darker brown of a purplish shade, and measure 3·55 × 2·35.

The Blue Crane becomes very tame when kept in captivity and takes food from the hand, eating fruit and vegetables. It is an exceedingly amusing bird to watch, as it dances to and fro with wings half outstretched, bowing and waving its head from side to side. It dislikes children and strange objects.

Genus III. BALEARICA.

Type.

Balearica, Briss. *Orn.* v, p. 511 (1760) B. pavonina.

Bill short and stout, distinctly shorter than the middle toe; nostrils oblique ovals; crown of the head covered with short black velvety plumes; a tuft of straw-like bristles on the nape of the neck;

throat and sides of the face bare ; feathers of the neck throughout elongate and lanceolate ; wing with the secondaries not produced beyond the primaries ; tail and legs as in *Bugeranus*.

Three species of this genus are generally recognised, all confined to Africa ; one of these is found within our limits.

689. **Balearica regulorum.** *Crowned Crane.*

Anthropoides regulorum, *Bennett*, *P. Z. S.* 1833, p. 118.

Balearica regulorum, *Kirk*, *Ibis*, 1864, p. 331 ; *Layard*, *B. S. Afr.* p. 304 (1867) ; *Gurney*, *Ibis*, 1868, p. 255 ; *Layard*, *Ibis*, 1869, p. 376 ; *Ayres*, *Ibis*, 1871, p. 264, 1873, p. 286, 1874, p. 106, 1877, p. 348 ; *Gurney*, in *Andersson's B. Dammaral*. p. 279 (1872) ; *Buckley*, *Ibis*, 1874, p. 389 ; *Barratt*, *Ibis*, 1876, pp. 192, 209 ; *Holub & Pelzeln*, *Orn. Siid-Afr.* p. 256 (1882) ; *Shelley*, *Ibis*, 1882, p. 363 [Mashonaland] ; *Alexander*, *Ibis*, 1900, p. 450 ; *Reichenow*, *Vög. Afr.* i, p. 265 (1900) ; *Marshall*, *Ibis*, 1900, p. 268 ; *Oates*, *Cat. B. Eggs*, ii, pp. 96, 370 (1902).

Balearica chrysopelargus (*nec Licht.*) *Tegetm.*, *P. Z. S.* 1880, p. 93 ; *id. ed.* *Blyth's Monogr. Cranes*, p. 15 (1881) ; *Butler*, *Feilden and Reid*, *Zool.* 1882, p. 342 ; *Reid*, *Ibis*, 1883, p. 225 ; *Sharpe*, *ed. Layard's B. S. Afr.* p. 629 (1884) ; *id. Cat. B. M.* xxiii, p. 274 (1894) ; *Shelley*, *B. Afr.* i, p. 186 (1896) ; *Woodward Bros.*, *Natal B.* p. 174 (1899).

"Kaffir Crane" of some ; "Mahem" of Dutch ; "Ihemu" of Amaxosa (Stanford).

Description. *Adult.*—General colour above slaty, paler on the neck, becoming darker on the back towards the tail, which is quite black ; crown of the head with a velvety cushion of black, closely set plumes, behind which on the occiput is a bunch of stiff straw-coloured bristles tipped with black and reaching a length of about four inches ; lores and sides of the face bare, bordered by a line of velvety black plumes, upper throat sparsely covered with a few black downy patches, lower throat bare with an elongate flattened wattle ; feathers of the neck, especially those above the breast elongated and pointed ; greater portion of the wings and their coverts white ; tips of some of the longer secondary coverts decomposed and straw-yellow in colour ; primaries black ; secondaries, except the two first, which are black, maroon red, some of the inner ones slightly decomposed at the tips ; below, like the back, slaty ; under wing-coverts white ; quills black below.

Iris light ashy ; bill black ; legs and feet black ; bare sides of

the face white, with a triangular band of vermillion above; throat lappet vermillion.

Length 39·0; wing 22·5; tail 10·0; tarsus 7·0; middle toe 4·0; culmen 2·5.

A young bird has the head and neck sandy-rufous; the crown of the head chestnut mottled with black bases to the downy feathers, only the lores are bare, the rest of the sides of the face and ear-

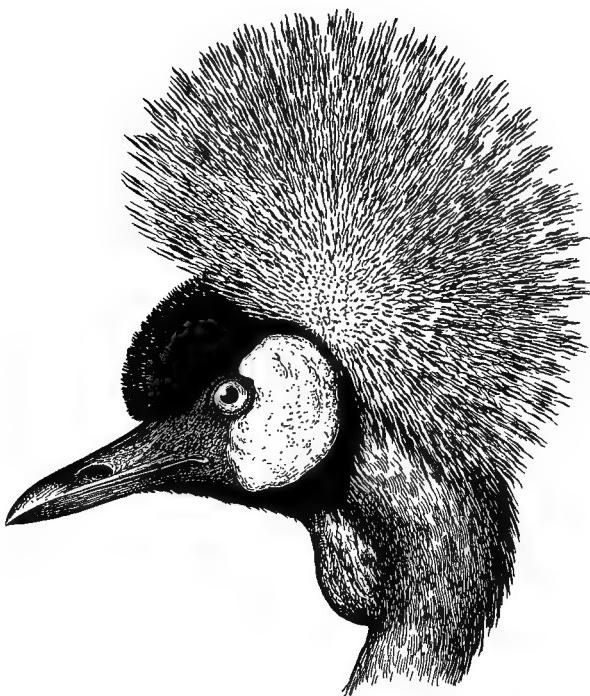


FIG. 92.—Head of *Balearica regulorum*. $\times \frac{2}{3}$

coverts being covered with isabelline down; the back is blackish, the feathers margined with rufous; the white wing-coverts are also margined with rufous and have black subterminal margins; beneath blackish with sandy-buff margins. Bill black, base of the lower mandible pale; bare skin between the eye and the base of the bill black; the cheeks, which are bare in the adult, thickly clothed with yellowish-white down; legs and feet ashy black.

Distribution.—The Crowned Crane is found only in the eastern

half of Cape Colony, in Natal, where it appears to be the most common of all the Cranes, and northwards throughout the Transvaal and Rhodesia to the northern part of German South-west Africa. It does not seem to be found in Great Namaqualand or Damaraland proper. Beyond our limits it reaches South Angola and Nyasaland and German East Africa as far as the Pangani River.

The following are recorded localities: Cape Colony—East London (Rickard), King William's Town (Trevelyan); Natal—Upper Umzimkulu Valley (Woodward), Newcastle (Reid); Orange River Colony—near Kroonstad (Barratt); Transvaal—Bloemhof district (Ayres), Potchefstroom (Barratt and Ayres); Bechuanaland—Botletli River (Andersson), Ngami country (Chapman); Mashonaland (Ayres and Marshall); German South-west Africa—Ondonga and Okavango River (Andersson); Portuguese East Africa—Zumbo on the Zambesi (Alexander).

Habits.—This bird, though known even in the middle of the eighteenth century, does not appear to have been properly described till 1833, when an example was brought home alive to the Zoological Gardens by Sir Lowry Cole, who had been Governor of the Cape. Previously our present bird had been confused with the West African species (*B. pavonina*). The bird described by Lichtenstein as *Ardea chrysopelagus*, which name has been applied to the Southern Crowned Crane, is without doubt the Black Stork.

The "Mahem," as it is called by the Dutch from its note, which is thus syllabled, is found in small troops of from twenty to thirty birds in the winter, but in pairs in the breeding season in summer. It inhabits open country and is seldom seen far from marshy ground or lakes. Here it marches about with stately gait in search of its food, which consists of large insects, small reptiles and frogs, and also of grain when procurable. The voice of the Crowned Crane is a melodious sound of two tones, the second half of which is somewhat prolonged and resembles the Dutch name "Mahem." Like the Blue Crane it often dances and plays all sorts of antics with bowing head and outstretched wings. A correspondent of Mr. Ayres found a nest on December 22nd in a swamp on the Mooi River not far from Potchefstroom; it was composed of rushes and reeds pulled and worked into a conical structure among long, rank grass in a swamp. The water was about ankle deep. Two eggs were found of a whitish colour, with a tinge of green showing through in consequence of the egg membrane being of that colour. They measured 3·44 × 2·3. Buckley, Barratt, Holub and Reid



FIG. 93.—*Balearica regulorum*.

all give somewhat similar accounts. Mr. Layard, who originally described the egg of this bird, which he received from Mr. Arnot from Mahura's country in Bechuanaland, stated that it was a pale dull brown tinged with green with a few confused reddish-brown blotches. This egg is still preserved in the South African Museum, and is now a very pale greenish-grey colour, while the blotches described by Layard appear as if they might be accidental. It measures 3·5 × 2·5.

Major Sparrow, who has taken the eggs of this species near Mooi River, in Natal, in May, tells me that these, when first laid, are bluish-white, but become greenish and tinged with brown after a few days, owing to the damp weeds in the nest.

The Crowned Crane is often kept in captivity. It becomes very tame and grows to be very much attached to its owner and its home. It may safely be trusted with its liberty, as, though it may take an occasional flight around the grounds, it will never travel very far. It is a good bird to keep in a garden, as it spends most of its time searching for insects and grubs.

Family II. OTIDÆ.

The Bustards form a very distinct family, characterised by their short bills, upright carriage and three-toed feet. They have from sixteen to twenty tail-feathers and eleven primaries; the tarsus and bare portion of the tibia are covered with small scales; the toes are short, stout and scutellated above, the claws short and blunt.

The following are the anatomical characteristics of the family: Skull schizognathous and holorrhinal; no basipterygoid processes; sternum with two posterior notches; aftershaft present; fifth cubital remex absent; cæca present; oil-gland absent; the femoro-caudal muscle absent, the other four Garrodian muscles present.

Genus I. OTIS.

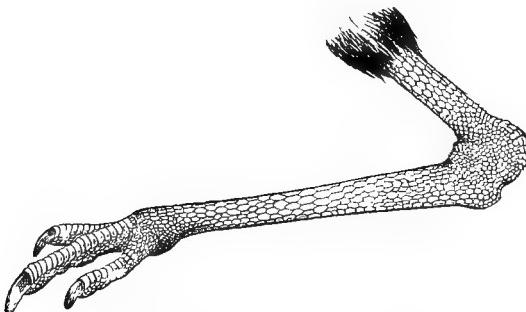
	<i>Type.</i>
Otis , Brisson, <i>Orn.</i> v, p. 18 (1760).....	O. tarda.

The characteristics of the family given above include those of the only genus of African Bustards here recognised.

Reichenow includes in his work twenty-one African species, eleven of which are met with in South Africa.

Key of the Species.

- A. Very large; wing 23 to 31 inches; head strongly crested; neck transversely banded with black and white *O. kori*, p. 308.
- B. Large; wings 17 to 28 inches; head not conspicuously crested.
- a. Tail with white cross-bands; back without arrow-shaped markings *O. caffra*, p. 300.
 - b. Tail with buffy-mottled cross-bands; back with arrow-shaped markings of sandy-buff *O. ludwigi*, p. 298.

FIG. 94.—Left foot of *Otis afra*. $\times \frac{1}{2}$

- C. Smaller; wings less than 15 inches.
- a. Beneath black, at least on the lower breast and abdomen.
 - a¹. With a very distinct nuchal crest of vinous red in the male; back with arrow-shaped markings of sandy-rufous *O. ruficrista*, p. 290.
 - b¹. Without a conspicuous crest.
 - a². Throat and neck black all round.
 - a³. Quill-lining black *O. afra*, ♂, p. 292.
 - b³. Quill-lining white *O. afrooides*, ♂, p. 294. - b². Throat black, connected with the black breast only by a narrow line
 - a³. Rump and tail freckled buff like the upper back *O. melanogaster*, ♂, p. 302.
 - b³. Rump and tail black contrasting with the back *O. hartlaubi*, p. 304.
 - c². Throat and neck not black but mottled and cross-barred, black and sandy, like the back.

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| <i>a³.</i> Quill-lining black | <i>O. afra</i> , ♀, p. 292. |
| <i>b³.</i> Quill-lining white | <i>O. afroides</i> , ♀, p. 294. |
| <i>b.</i> Beneath slaty-blue throughout | <i>O. cærulescens</i> , p. 305. |
| <i>c.</i> Beneath whitish. | |
| <i>a¹.</i> Head and neck mottled grey, like the back. | |
| <i>a².</i> Throat black, but no black on the gape or ear-coverts | <i>O. vigorsi</i> , p. 296. |
| <i>b².</i> Throat, a spot at the gape and another behind the ear all black ... | <i>O. rueppelli</i> , p. 298. |
| <i>b¹.</i> Head and neck mottled; back with conspicuous black centres to the feathers | <i>O. melanogaster</i> , ♀, p. 302. |
| <i>c¹.</i> Neck rufous, with a slaty-blue patch in front; crown slaty-blue | <i>O. barrowi</i> , p. 307. |

690. **Otis ruficrista.** *Red-crested Knorhaan.*

Otis ruficrista, Smith, *Rep. Exped. Centr. Afr.* p. 56 (1836); *id. Ill. Zool. S. Afr. Aves*, pl. 4 (1838); Sharpe ed. *Layard's, B. S. Afr.* pp. 639, 854 (1884); Fleck, *Journ. Ornith.*, 1894, p. 385; Bryden, *Nat. and Sport*, p. 44 (1897); Millaïs, *Breath from the Veldt*, 2nd ed., pp. 49, 78, 82, with sketches (1899); Reichenow, *Vög. Afr.* i, p. 252 (1900).

Eupodotis ruficrista, Layard, *B. S. Afr.* p. 286 (1867); Ayres, *Ibis*, 1871, p. 263, 1880, p. 110, 1886, p. 293; Gurney, in Andersson's, *B. Damara*, p. 259 (1872); Buckley, *Ibis*, 1874, p. 386; Shelley, *Ibis*, 1882, p. 361 [Rhodesia]; Bryden, *Gun & Camera*, pp. 155, 479 (1893); Kirby, *Haunts of Wild Game*, p. 560 (1896).

Lophotis ruficrista, Sharpe, *Cat. B. M.* xxiii, p. 291 (1894); Oates, *Cat. B. Eggs*, ii, p. 365 (1902).

Afrotis ruficrista, Shelley, *B. Afr.* i, p. 184 (1896).

"Bush Knorhaan," in Bechuanaland.

Description. *Adult Male.*—General colour a rufous-brown, mottled with paler and darker brown; most of the feathers with dark brown and V-shaped paler sandy-rufous markings; crown of the head and a patch from the base of the beak to below the eye slaty-blue, cheeks and throat white, the latter with a central band of black; a tuft of decomposed feathers on the nape of a vinous red colour, forming a crest; ear-coverts fulvous, neck ashy, becoming pale slaty blue on the chest; wings like the back, some of the outer coverts pure white; primary quills and the greater part of the primary coverts black, slightly mottled with white; tail feathers like the back but more finely mottled, with a sub-terminal band of black, which, on the outer feathers, becomes terminal;

beneath the sides of the breast mottled like the back, below which are two patches of pure white; rest of the lower surface, including the undersides of the wings and tail, black.

Iris yellow to light creamy-buff; bill ashy, dusky on the culmen, yellowish at the base; tarsi and feet nearly white.

Length about 20; wing 10·45; tail 5·5; culmen 1·3; tarsus 3·0.

In the female the crown is dark brown, with large spots of sandy rufous, the occipital region ashy, freckled with sandy rufous without crest; eyebrow isabelline-buff; cheeks and throat white, without the mesial band of black; neck and chest brown mottled with sandy-buff spots and markings, with a few lines of black; a broad band of white across the chest.

The vinous-coloured crest of the male fades in old skins, especially when exposed to light, to a yellow or white.

Mr. Bryden remarks that the whole of the soft, fluffy, under portion of the feathers of this bird is of a delicate rufous pink tinge, as is also the skin; this fades quickly after death.

Distribution.—This Knorhaan was first obtained by Smith at Latakoo, near Kuruman; it has been noticed in the Orange River Valley by Bradshaw, but does not seem to be found to the south of that river, although an example, stated to have been obtained by Arnot in the Albany district, is preserved in the South African Museum. It extends northwards through the Transvaal to Benguela in the west and to Rhodesia in the east, but is not yet known from Nyasaland.

The following are recorded localities: Cape Colony—Orange River Valley (Bradshaw), Koning, near Kuruman (Eriksson, in S. A. Museum), Matapling River, near Mafeking (Bryden); Transvaal—Elands River and Limpopo River in Rustenburg and Marico districts (Ayres), Sabi River in Lydenburg (Francis, in S. A. Mus); Zoutspansberg district (Millais), Swaziland and Barberton (Gillilan); Bechuanaland—Kanye (Exton), Botletli River (Bryden), Ngami region (Chapman and Fleck); Rhodesia—Bulawayo and Umfuli River (Ayres); German South-west Africa—Great Namaqualand and South Damaraland (Andersson), Reheboth, Awasberg and Okavango (Fleck).

Habits.—The Red-crested Knorhaan is found singly or in pairs, chiefly in bush or forest country; it rises from the ground swiftly and noiselessly, and flies off at a rapid rate, dodging in and out among the trees and bushes, so that it is a good sporting bird. Its note is a melancholy “goo goo,” frequently repeated, while

Ayres states that in addition to the ordinary note, this bird sometimes whistles a short song which might be taken for that of some small bush-bird, such as a Shrike or Thrush. Its food consists of insects, especially beetles and termites. Millais came across this bird very frequently, and gives a beautiful full page figure of it in his well known work above quoted ; he found it solitary and shy in disposition, creeping away and concealing itself at the appearance of danger ; he also states that it is remarkably silent. One of his figures gives a representation of a singular habit he noticed in regard to this bird ; every evening towards sunset it rises from the grass, and mounting perpendicularly into the air to a height of from 100 to 200 feet it closes its wings and drops head first to the earth, only opening its wings to break its fall when within a few feet of the ground.

Ayres found a nest of this bird on November 14th near Bulawayo when accompanying Mr. J. S. Jameson on his expedition. The eggs, two in number, were laid on the ground, and partially hidden by a tuft of grass, and were much incubated. They were shaped like Plover's eggs, being much pointed at one end. In colouring they were greyish creamy-white, much spotted and blotched with dark umber ; they measured $2\cdot25 \times 1\cdot5$ and $2\cdot0 \times 1\cdot5$ respectively.

691. *Otis afra. Black Knorhaan.*

White-eared Bustard, *Lath. Gen. Syn.* ii, pt. 2, p. 802 pl. lxix. (1782).

Knorrhane, *Sparmann, Travels*, 8vo, ed. i, p. 162 (1785).

Otis afra, *Gmel. Syst. Nat.* i, p. 724 (1788) ; *Holub & Pelz. Orn. Südafr.* p. 281 (1882) ; *Sharpe, cd. Layard's B. S. Afr.* p. 642 (1884) ; *Bryden, Kloof and Karoo*, p. 320 (1889) ; *Nicolls and Eglington, Sportsm. S. Afr.* p. 115 (1892) ; *Reichenow, Vög. Afr.* i, p. 256 (1900). *Eupodotis afra*, *Layard, B. S. Afr.* p. 286 (1867) ; *Gurney, in Andersson's B. Damara*, p. 260 (1872) ; *Shelley, Ibis*, 1875, p. 85.

Compsotis afra, *Sharpe, Cat. B. M.* xxiii, p. 293 (1894) ; *Oates, Cat. B. Eggs*, ii, p. 365 (1902).

Afrotis afra, *Shelley, B. Afr.* i, p. 184 (1896).

"Knorhaan" (pronounced Koraan, i.e., Scolding Cock) of the Colonists, "Ikala Kalu" of Amaxosa (Stanford).

Description. Adult Male.—Crown of the head ashy-black with a few transverse bars of pale fulvous, surrounded by a more or less distinct bluish-grey band ; ear-coverts white ; rest of the head, neck all round, all the lower surface, axillaries, under wing-coverts,

wing-quills above and below black; above, including the scapulars and a few of the lesser wing-coverts barred and vermiculated with black and sandy-buff; rump, upper tail-coverts and tail with black and white and less sandy-buff; primaries, primary coverts, and almost all the secondaries black, the innermost of the latter with white on the outer web; carpal joint, edge of the wing and most of the median and inner coverts white, forming in the folded wing a conspicuous white band along its whole length.

Iris dusky tawny brown; bill dark horn, yellowish at the base of the lower mandibles; tarsi and feet yellow.

Length about 21·0; wing 11·25; tail 5·5; culmen 1·20; tarsus 3·70.



FIG. 95.—Head of *Otis afra*, ♂ $\times \frac{11}{12}$

The female has the head, neck and chest mottled and streaked and barred with black and sandy-rufous, the lower breast is quite white, without or with traces of black barring, the rest of the lower surface is black, as in the male. The markings on the back are much more mottled, and with less regular barring as compared with the male. Wing about 10·75; tarsus 3·50.

A chick just hatched is a pretty little creature covered with down, mottled with rich rufous-yellow and white.

Distribution.—The Black Knorhaan is confined to Cape Colony south of the Orange River, north of which its place is taken by the

White-quilled Knorhaan. To the east it does not extend further than the Albany division.

The following are localities : Cape Colony—Berg River (Layard), Malmesbury and Stellenbosch (S. A. Mus.), Ceres (Shelley), Sunday River in Uitenhage (Berlin Mus.), Fish River Bush in Albany (Trevelyan).

Habits.—This is certainly the most abundant of all the game birds throughout Cape Colony. It is usually found in pairs in the open country, and is one of the noisiest of birds. When approached the cock rises with a flutter and gives vent to its peculiar harsh cry, sounding like “ go back go back ” or “ crack crack.” Although the wing movement is quick the flight is by no means rapid or prolonged, and after being flushed the bird soon alights again not very far off, and watches for the fresh approach of danger. The hen bird, of a more retiring and silent disposition, is very difficult to flush, and usually takes refuge in an Antbear’s or Meerkat’s hole. Dr. Stark found these birds very common in the undulating scrub-overgrown hillsides near Malmesbury. During the month of August, when he was there, the males were very noisy, calling against one another continually. He further states, “ they rise when one is seventy or eighty yards off and fly round in large circles, not going straight away ; as they rise they utter their loud scolding cry and continue calling during their flight. Each male seems to occupy some slight rise on the hillside within calling distance of the next one.”

Layard found nests near the Berg River. They were merely depressions in the soil, sometimes lined by a few bents of grass. The eggs, two in number, are rounded ovals of a pale shade of greeny-brown, blotched with varying amounts of darker brown. They measure about $2\cdot23 \times 1\cdot78$.

The flesh of the Knorhaan is tough and inferior. It tastes better if the bird is skinned before cooking.

692. *Otis afrooides.* *White-quilled Knorhaan.*

Otis afraides, *Smith*, *P. Z. S.* 1830, p. 11.

Otis afrooides, *Smith*, *S. Afr. Quart. Journ.* i, no. 5, p. 14 (1831); *id. Ill. Zool. S. Afr. Aves*, pl. 19 (1839); *Holub & Pelz.*, *Orn. Süd-Afr.* p. 229 (1882); *Sharpe*, *ed. Layard’s B. S. Afr.* pp. 642, 855 (1884); *Nicolls and Eglington*, *Sportsm. S. Afr.* p. 117, fig. 38 (1892); *Bryden, Gun and Camera*, pp. 100, 481 (1893) *Fleck, Journ. Ornith.* 1894,

p. 385; *Rendall, Ibis*, 1896, p. 176; *Bryden, Nature and Sport*, p. 41 (1897); *Millais, Breath from the Veldt*, 2nd ed., pp. 49, 111, 336, with sketches (1899); *Reichenow, Vög. Afr.* i, p. 254 (1900); *Haagner, Ibis*, 1902, pp. 574, 580.

Lissotis leucoptera, *Reichenb.*, *Handb. Gall.* pl. 254 (1848).

Eupodotis afroides, *Layard, B. S. Afr.* p. 287 (1867); *Gurney, Ibis*, 1868, p. 48 (Upper Natal); *Layard, Ibis*, 1869, p. 375; *Gurney in Andersson's B. Damaral.* p. 260 (1872); *Buckley, Ibis*, 1874, p. 385; *Ayres, Ibis*, 1877, p. 347, 1880, p. 265.

Eupodotis afra, (*nec Linn.*) *Barratt, Ibis*, 1876, p. 192; *Shelley, Ibis*, 1882, p. 362 [Bommingani Pan].

Compsotis leucoptera, *Sharpe, Cat. B. M.* xxiii, p. 294 (1894); *Oates, Cat. B. Eggs*, ii, p. 365 (1902); *Sharpe, Ibis*, 1904, p. 13 [Deelfontein]. *Afrotis afroides*, *Shelley, B. Afr.* i, p. 184 (1896).

Description. *Adult male.*—Closely resembling *O. afra* in every respect except that the primaries after the first are white to a great extent on the inner web, the tips alone being black, while the under wing-coverts and the quills from below are also white.

Iris light tawny brown; bill greyish-brown; the basal half pale rose-pink, changing after death to pale chrome-yellow; tarsi and feet gamboge-yellow.

Length about 21; wing 10·0; tail 5·0; culmen 1·2; tarsus 3·4.

The female differs from the female of *C. afra* in exactly the same respects as does the male. Wing 10·0; tarsus 3·0.

Distribution.—The White-quilled Knorhaan replaces the Black Knorhaan northwards from the northern part of the Karoo through Bechuanaland and the Orange River Colony as far as Damaraland proper and the Transvaal. It has not been met with, so far as I am aware, north of the Limpopo.

The following are recorded localities: Cape Colony—Deelfontein resident (Seimund), Orange River Valley (Bradshaw); Hart's River near Taungs (Holub), Setlagoli near Mafeking (Bryden); Natal—Upper districts (Ayres); Orange Rivey Colony—near Philippolis (Holub), Winburg (Barratt); Transvaal—Potchefstroom (Ayres), near Wolmeranstad (Hamilton), Barberton (Rendall), near Johannesburg (Haagner); Bechuanaland—Bommingani Pan (Ayres), Botletli (Bryden); German South-west Africa—Great Namaqualand and Damaraland, common (Andersson and Fleck).

Habits.—This Knorhaan does not differ from the Black Knorhaan in habits. It is found usually in pairs in the open country, and is exceedingly noisy, rising when approached with a loud and harsh cackle and generally circling round high up in the air and settling again very soon. The females, which are not nearly so

often seen, and are not so loud-voiced, endeavour to escape danger by concealing themselves. The food consists of insects, small reptiles, worms, and vegetable matter. In the early morning they are often seen perched on an ant heap sunning themselves. Andersson found two nests in January at Omapju in Damaraland.

The nest consists merely of a depression in the ground, usually sheltered by a long tuft of grass, and the eggs are two in number. Eggs in the South African Museum resemble those of the Black Knorhaan, but appear a little smaller; a clutch taken by Major Sparrow at Kaalfontein in the Lindley district of the Orange River Colony on November 25 are brown or greenish-brown, moderately blotched with spots of darker brown. They measure 2·05 × 1·65.

693. *Otis vigorsi. Vaal Knorhaan.*

Otis vigorsi, Smith, P. Z. S. 1830, p. 11; Bryden, Kloof and Karoo, p. 320 (1889); Reichenow, Vög. Afr. i, p. 248 (1900).

Otis scolopacea, Temm. Pl. Col. v, pl. 576 (1835); Sharpe, ed. Layard's B. S. Afr. pp. 637, 854 (1884); Nicolls and Eglington, Sportsm. S. Afr. p. 117, fig. 45 (1892); Bryden, Gun and Camera, p. 480 (1893); id. Nature and Sport, p. 45 (1897); Rendall, Ibis, 1896, p. 176.

Eupodotis scolopacea, Layard, B. S. Afr. p. 284 (1867); Barrait, Ibis, 1876, p. 192; Holub & Pelzeln, Orn. Süd-Afr. p. 232 (1882).

Heterotetrax vigorsi, Sharpe, Cat. B. M. xxiii, p. 296 (1894); Shelley, B. Afr. i, p. 185 (1896); Woodward Bros. Natal B. p. 175 (1899); Oates, Cat. B. Eggs, p. 86, pl. iv, fig. 4 (1902); Whitehead, Ibis, 1903, p. 235; Sharpe, Ibis, 1904, p. 14 [Deelfontein].

"Dik-kop Knorhaan" of the Dutch.

Description. *Adult*—General colour above and below ashy-grey, very finely freckled with dark brown, with a pale rufous or pinky sheen over a good deal of the back; a conspicuous black triangular patch on the chin and throat extending as a narrow line about half way down the neck; another black patch on the nape somewhat concealed by the elongated occipital feathers which form a slight crest; round the throat-patch the feathers are paler, almost white; primaries, primary coverts and secondaries blackish, the bases and inner webs of most of them tawny and freckled with tawny; inner secondaries and scapulars like the back but with patches of ashy-black; beneath like the back, but a good deal paler and with a pinky sheen; the abdomen being almost white; axillaries like the flanks, brown with blackish vermiculations.

Iris brownish-grey.

Length about 24 ; wing 14·0 ; tail 6·0 ; tarsus 3·6 ; culmen 1·45.

A bird, which is probably a female, has a less extended throat patch and a more marked narrow transverse bar across the tail ; it is also smaller ; wing 12·5 ; tarsus 3·3. Bill dark slate, whitish on the base of the lower mandible ; feet dull chrome-yellow.

Distribution.—The Vaal Knorhaan is found over the greater part of the more open and central districts of the Colony, extending to the upper parts of Natal according to Hutchinson, to the neighbourhood of Barberton in the Transvaal according to Rendall, and to Bechuanaland according to Bryden.

Curiously enough, this species never seems to have been obtained by Ayres during his many years of collecting in the Western Transvaal, nor has it been noticed north of the Limpopo. The following are localities : Cape Colony—Zoetendals Vlei in Bredasdorp and Beaufort West (Layard), Little Namaqualand (Howard), Deelfontein, resident (Seimund), Orange River near Upington (Bradshaw), Setlagoli near Mafeking (Bryden) ; Orange River Colony — near Odendaalstrom on the Orange River (Whitehead), near Winburg (Barratt) ; Transvaal—near Barberton (Rendall).

Habits.—But little attention has been paid to this bird since Layard wrote the following account : “ It is usually found in pairs, and prefers running among the scanty herbage and trusting to its dusky plumage to effect its escape to taking to flight. If it fancies itself unobserved, it will suddenly squat, and unless the spot is correctly marked, so great is its similarity to the soil and stones among which it is found that it is next to impossible to detect it. It is so well aware of this, that it will remain immovable till the sportsman walks towards it, on which it instantly takes flight ; but if it is approached in a series of concentric circles, it remains until the sportsman is within a few paces. It feeds on seeds, insects and small reptiles, constructs no nest, but deposits two eggs in a depression of the soil on the open veld.”

Its voice is a crowing sound like “ Kir-reck-a-rack-a-rack,” according to Nicolls and Eglington.

Eggs in the South African Museum from Nelsport in Beaufort West and Upington on the Orange River, are nearly ovals of pale brown to olive-brown ground colour, blotched somewhat sparingly with darker brown of several shades. They measure 2·60 × 1·75.

694. **Otis rueppelli.** *Rüppell's Knorhaan.*

Otis rueppelli, *Wahlb. Journ. Ornith.* 1857, p. 1; *Finsch & Hartl., Vög. Ost-Afr.* p. 619 (1870); *Sharpe, ed. Layard's B. S. Afr.* p. 643 (1884); *Fleck, Journ. Ornith.* 1894, p. 385; *Reichenow, Vög. Afr. i.* p. 252 (1900).

Otis picturata, *Hartl. P. Z. S.* 1865, p. 88, pl. vi.

Eupodotis rueppelli, *Gurney in Andersson's B. Damaral.* p. 259 (1872). *Heterotetrax rueppelli*, *Sharpe, Cat. B. M. xxiii,* p. 297 (1894); *Shelley, B. Afr. i.* p. 185 (1896).

Description. *Adult.*—Like the previous species (*O. vigorsi*) but much paler and with a good deal of blue-grey on the head; sides of the neck also blue-grey, divided by a broad line of black, extending on to the fore neck and joining the black patch on the centre of the throat; sides of the face mostly white, a patch of white on the cheeks extending backwards and joining below the black patch, the latter united to a narrow eyebrow; ear-coverts with a black patch; below from the fore neck downwards white, including the under wing-coverts and quill lining.

Iris pale grey varied by dark brown; legs and toes dirty yellow.

Length about 20; wing 12·5; tail 5·3; tarsus 3·3; culmen 1·6.

Distribution.—Rüppell's Knorhaan appears to take the place of the Vaal Knorhaan in German South-west Africa, where it is plentiful in Great Namaqualand and Southern Damaraland according to Andersson. North of the Cunene it was obtained by Monteiro in the littoral region of Angola and was described by Hartlaub under another name.

The only definite localities are those given by Fleck: Tsoaxoub and near Usab or Urab, both on or near the Swakop River in Central Damaraland.

Habits.—Andersson states that this species "is partial to slightly undulating ground abounding in boulders and loose stones; it is usually found in pairs. When disturbed it utters a succession of quick, harsh notes, and crows not unlike a Corn Crake on taking wing but in a much louder strain." According to Fleck it is by no means a shy bird.

695. **Otis ludwigii.** *Ludwig's Paauw.*

Otis coleii, *Smith, S. Afr. Quart. Journ. i.* no. 5, p. 15 (1831) [nom. nudum].

Otis ludwigii, *Rüpp., Mus. Senck. ii.* p. 223, pl. 14 (1837); *Sharpe, ed. Layard's B. S. Afr.* pp. 636, 854 (1884) *Nicolls and Eglington, Sportsm. S. Afr.* p. 114 (1892); *Rendall, Ibis*, 1896, p. 175; *Shelley, B. Afr. i.* p. 185 (1896); *Reichenow, Vög. Afr. i.* p. 246 (1900).

Eupodotis ludwigi, *Layard*, *B. S. Afr.* p. 284 (1867); *id. Ibis*, 1869, p. 75; *Ayres*, *Ibis*, 1869, p. 299; *Butler*, *Feilden and Reid, Zoologist*, 1882, p. 340.

Neotis ludwigi, *Sharpe*, *Cat. B. M.* xxiii, p. 299 (1894); *Woodward Bros. Natal B.* p. 175 (1899); *Oates*, *Cat. B. Eggs*, ii, pp. 87, 366 (1902); *Sharpe*, *Ibis*, 1904, p. 15 [Deelfontein].

"Iseme" of Natal Zulus (Woodward).

Description. Adult Male.—Crown and sides of the head and front part of the neck down to the chest where this colour ends in a point, brown; a white patch on the occiput and a mottling of the same colour on chin and throat; sides and back of the neck white; this white continuing on either side of the brown to the under surface of the body, which is entirely white; a more or less triangular patch at the base of the neck behind tawny-rufous; back, rump, tail and wings dark brown, vermiculated with pale sandy-rufous, most of the feathers of the back with an arrow-shaped patch of the same colour; on the coverts this sandy-rufous becomes white and white tips are present on most of these feathers; wing-quills brown, some with more, some with less white, chiefly on the inner webs and at the bases; edge of the wing white, tail-feathers like the back but with four black cross-bands more or less distinctly indicated; below, including the axillaries and under wing-coverts pure white.

Iris greyish-brown, bill blackish-horn, white toward base of lower mandible; tarsus and feet greenish-white.

Length about 39·0; wing 21·5; tail 9·75; culmen 2·20; tarsus 5·0.

The female is somewhat similar but much smaller; there is no white occipital patch, but the brown round the eye and on the chest is considerably mottled and freckled with white; wing 17·5; culmen 2·05; tarsus 4·25. An individual shot by Butler weighed 7½ lbs., the wing measuring 19.

Distribution.—Ludwig's Paauw is apparently generally distributed over the greater part of Cape Colony, Orange River Colony, Southern Transvaal and the upper part of Natal, but owing to the fact that the distinctions between it and *O. caffra* have not been generally recognised by sportsmen and collectors a little uncertainty still prevails as to its exact range. It seems to be subject to partial migratory movements, as it is stated to be found on the Frankfurt flats near King William's Town only between the months of July and November, while it usually comes to the south-western districts and near Cape Town only during the months of November, December and January.

The following are recorded localities : Cape Colony—Cape Flats near Cape Town (S. A. Mus.), Little Namaqualand (Howard), Beaufort West (Layard), Deelfontein, July (Seimund), Orange River near Upington (Bradshaw), Sunday River in Uitenhage division (Berlin Mus.), Frankfurt Flats near King William's Town, July to November (Trevelyan), near East London, January (Wood); Natal—Nottingham Road and Ladysmith (Woodward), near Newcastle (Butler); Transvaal—Barberton (Rendall), near Potchefstroom (Ayres).

Habits.—Little is known about the habits of this bird. Ayres was shown a breeding place, about thirty miles from Potchefstroom on the top of a low, stony range of hillocks. The eggs, two in number, were laid on the bare ground without any pretence of a nest. While Ayres was resting close to the nest the hen bird lay crouched on the ground within ten yards of him, but he could not see it, even when his companion, a Hottentot, pointed it out to him. The bird was subsequently shot by the Hottentot.

An egg in the South African Museum, taken by Mr. J. Dankers at Zoetendals vlei in the Bredasdorp division, is an even oval of a pale olive-green ground colour, rather faintly streaked with purplish and yellowish-brown. It measures 2·90 × 2·15.

Mr. Wood tells me that this is the only Bustard which visits the neighbourhood of East London, and that it does not come every year. In January, 1898, he saw two flocks close to the coast, each containing about a score of birds. They were very wary, but a pair was secured eventually, which proved to be very fat.

Dr. Howard writes to me that these birds arrive in Namaqualand about the end of May or early in June, and leave again about November or even December; they are usually seen in flocks of from eight to twenty birds, and feed about the plains in the morning; during the middle of the day they fly to broken, hillocky ground and rest, returning to the plains again about 3.30 p.m. where they search for beetles and caterpillars, which form the bulk of their food. They fly heavily and apparently slowly, but can cover space marvellously quickly with their long sustained flight.

696. *Otis cafra. Stanley Bustard or Veld Paauw.*

Otis cafra, Lichtenst., *Cat. Rer. Nat. Hamb.* p. 36 (1773); Sharpe, ed. Layard's *B. S. Afr.* p. 634 (1884); Nicolls & Eglington, *Sportsman. S. Afr.* p. 114, fig. 41 (1892); Shelley, *B. Afr.* i, p. 185 (1896); Millais, *Breath from the Veldt*, 2nd ed., p. 53 (1899); Reichenow, *Vög. Afr.* i, p. 244 (1900).

Eupodotis caffra, Gurney, *Ibis*, 1860, p. 216, 1864, p. 360, 1868, p. 467 [Natal]; Layard, *B. S. Afr.* p. 283 (1867); Drummond, *Large Game*, p. 408 (1875); Ayres, *Ibis*, 1878, p. 298; Holub & Pelz. *Orn. Süd-Afr.* p. 233 (1882); Bryden, *Kloof and Karoo*, p. 319, with plate (1889). *Neotis caffra*, Sharpe, *Cat. B. M.* xxiii, p. 301 (1894); Woodward Bros., *Natal Birds*, p. 176 (1899); Oates, *Cat. B. Eggs*, ii, pp. 87, 366 (1902). "Isema" of Amaxosa (Stanford).

Description. *Adult Male*.—Forehead and crown of the head black with white bases to the feathers; a white eyebrow and upper throat; sides of the face including the ear-coverts, sides of the neck and front of the neck and chest bluish-slate; lower half of the hinder aspect of the neck tawny-rufous, separated from the bluish-slate by a posterior lateral band of white on each side meeting below the occiput; mantle, back, upper tail-coverts, ulnar edge of the wing, lesser wing-coverts and inner longer secondaries dark brown, finely and richly vermiculated with pale sandy-rufous, but with no arrow-shaped larger spots; wing-quills and coverts black, most of the latter with white tips or subterminal bands, the former especially in the case of the sixth primary, with a good deal of white, especially at their bases or on their inner webs; tail-feathers black with three transverse bands and a narrow tip of white on the two central feathers, the subterminal white bands somewhat obscured by mottling; below from the breast onwards, including the axillaries and under wing-coverts white.

Iris light hazel; upper mandible dusky, lower one yellowish; legs and feet dingy yellowish-white.

Length about 43·0; wing 23·0; tail 10·75; tarsus 6·0; culmen 2·55; weight, according to Ayres, 20 lbs.

The female is a good deal smaller than the male; the centre of the crown is ashy-white, finely vermiculated with darker; the bluish-slate of the sides of the face, neck and breast is replaced by white, closely-spotted and vermiculated with brown. Length about 34·0; wing 18·0; tarsus 5·1; weight (Ayres) 9 lbs.

Distribution.—The Stanley Bustard is found over the greater part of South Africa from Cape Colony to the limits of the high veld of the Transvaal. It was not met with by Andersson in German South-west Africa, nor, so far as I am aware, has it been recorded from Rhodesia. Beyond our limits it has been obtained in Southern Angola, in the central parts of German East Africa, up to the Victoria Nyanza, and recently on the Ubangi, a northern tributary of the Congo.

The following are South African localities : Cape Colony—Cape division and near Upington, on the Orange River (S. A. Mus.), Ceres and Beaufort West (Layard), Sunday River in Uitenhage (Holub), Frankfurt Flats, near King, July to November (Trevelyan); upper parts of Natal (Ayres); Orange River Colony (Millais); Transvaal—High veld (Millais), Potchefstroom, May (Ayres).

Habits.—The Veld Paauw is found singly, in pairs, or even sometimes in small parties of from three to five birds, on the open plains, especially on the hilly uplands which rise out of the flats. In some parts of the country it is migratory, appearing, as a rule, in Natal only in winter, while Trevelyan states that it is found only between July and November on the Frankfurt Flats, near King William's Town. It feeds on insects, and even good-sized snakes and lizards, while it by no means despises berries and fruits, when they are ripe. It is rather a silent bird, but sometimes makes a low melodious humming noise in the morning and evening, while during the breeding season the cock gives vent to a loud, far-resounding boom, something like that of a Bittern; at this period also they display themselves before the females, expanding their throats enormously and turning their feathers back; they then strut about and utter their booming noise.

Ayres found the eggs, generally at the top of a hill, laid in a depression scratched out of the earth and usually bare, though sometimes a wisp of grass may be added; the eggs are two in number and resemble those of *O. ludwigi*; those in the South African Museum from Upington and Nelspoort are oval and pale brown; washed, rather than blotched, with a slightly darker shade of the same colour; they measure 2·90 × 2·10. Layard was told that eggs were hatched near Ceres on April 20.

The flesh of this Paauw is particularly well tasting.

697. *Otis melanogaster*. *Black-bellied Knorhaan.*

Otis melanogaster, Rüppell, *Neue Wirbelth. Vögel*, p. 16, pl. 7 (1835); Kirk, *Ibis*, 1864, p. 331; Sharpe, ed. Layard's *B. S. Afr.* pp. 642, 854 (1884); Seeböhm, *Ibis*, 1887, p. 351; Nicolls & Eglington, *Sportsm. S. Afr.* p. 115, fig. 39 (1892); Shelley, *B. Afr.* i, p. 185 (1896); Woodward Bros., *Ibis*, 1898, p. 226; Reichenow, *Vög. Afr.* i, p. 256 (1900). *Eupodotis melanogaster*, Gurney, *Ibis*, 1862, p. 153 [Natal]; Layard, *B. S. Afr.* p. 286 (1867); Holub & Pelz. *Orn. Süd-Afr.* p. 233 (1882); Shelley, *Ibis*, 1882, p. 362 [Umfuli River].

Lissotis melanogaster, Sharpe, Cat. B. M. xxiii, p. 306 (1894); Woodward Bros., Natal B. p. 177 (1899); Marshall, Ibis, 1900, p. 263; Oates, Cat. B. Eggs, ii, p. 366 (1902).
“Unofunjwa” of Natal Zulus (Woodward).

Description. *Adult Male.*—General colour above dark brown, the feathers vermiculated with pale sandy and dark brown, the latter colour forming conspicuous round or arrow-shaped patches on most of the feathers; crown of the head buff, slightly freckled with black, becoming sandy-buff posteriorly, separated from the ear-coverts and nape by a line of black, bordered within by an obscure line of white, ear-coverts and neck all round pale sandy-freckled buff; chin and throat black with a greyish tinge; this continued as a narrow line down the neck to the breast; lesser wing-coverts like the back, but paler, others, except those of the primaries, white; those along the ulnar portion and bend of the wing, pure white, the others slightly banded with black; primaries, primary coverts and outer secondaries, black; the coverts banded and freckled at the tips with white; the inner primaries and outer secondaries with a good deal of white, especially on the inner webs; tail-feathers freckled dark brown and buff, with three or five narrow transverse bands of brown, the outer pair almost pure black; a patch of white on either side of the breast; rest of the under parts, including the under wing-coverts and axillaries, black; wing-quills partly black and partly white below.

Iris light brown, darker towards the centre; bill pale yellow; culmen dark brown; legs and feet yellowish-brown.

Length about 20·0; wing 15·0; tail 8·0; tarsus 5·25; culmen 1·55.

The female resembles the male on the upper surface, but is more profusely spotted with sagittate spots of black, relieved by a creamy-white line, which borders the black spots and brings them into strong relief; head blackish spotted with sandy-buff; eyebrows, sides of the face and ear-coverts also sandy-buff, with no black on the face or sides of the crown; chin and upper throat white; lower throat and chest sandy-buff, minutely freckled with blackish; feathers of the breast with longitudinal lines and spear-shaped markings of black; rest of the under surface white, tinged with sandy-buff, with large blotches of black along the sides of the body; under wing-coverts black, barred with white; axillaries black.

Distribution.—This Knorhaan, which was first met with in Abyssinia by Rüppell and described by him some years later, is

widely spread over the greater part of Africa from Gambia in the west, and Abyssinia and the White Nile in the east, southwards through German East Africa and Nyasaland, to the Zambesi. It also occurs in Angola. Within our limits it has been once recorded from Cape Colony; it is fairly common in Natal, Zululand and Mashonaland, but does not apparently reach the high plateau of the Orange River Colony and the Transvaal.

The following are recorded localities: Cape Colony—East London, once observed (Rickard); Natal—Congella Flats, near Durban (Bt. Mus.), Port Shepstone and York (Maritzburg Mus.), Ivuna River in Zululand (Woodward); Rhodesia—near Victoria Falls (S. A. Mus.), Mashonaland, generally (Marshall), Umfuli River (Ayres).

Habits.—The Black-bellied Knorhaan is not a common bird in South Africa and little is known of its habits. It is found usually solitary, but sometimes in small companies, on open grassy downs and flats; it is a bird of heavy flight, and usually endeavours to escape from danger by crouching down on the ground. In winter it often becomes extremely fat, and is then most excellent eating. The Woodwards say that when hidden by long grass the male bird makes his presence known by gobbling like a turkey, and further, that during the breeding season the males become very pugnacious, fighting like game-cocks with beak and foot. The vanquished do not take flight, but slink off, the victor pursuing and pecking them vigorously. The Woodwards found an egg of this bird in Zululand, laid on the bare ground; it was cream-coloured and smeared and blotched with dark brown.

698. *Otis hartlaubi*. *Hartlaub's Knorhaan.*

Otis hartlaubi, Heuglin, *Journ. Ornith.* 1863, p. 1; Shelley, *B. Afr.* i, p. 185 (1896); Reichenow, *Vög. Afr.* i, p. 259 (1900).
Lissotis hartlaubi, Sharpe, *Cat. B. M.* xxiii, p. 307 (1894).

Description. *Adult Male.*—Similar to *O. melanogaster* in every respect, but with the lower back, rump, upper and under tail-coverts and tail black.

Length 27; wing 13·5; tail 6·7; tarsus 4·7; culmen 1·95.

Distribution.—This Knorhaan is found in Senaar, Somaliland and British East Africa. It is included among our birds solely on the record of an example from South Africa in the British Museum,

presented by Mr. D. W. Mitchell, but the locality is probably erroneous.

699. *Otis cærulescens*. *Blue Knorhaan.*

Otis cærulescens, Vieill., *Enc. Meth.* i, p. 334 (1820); Temm., *Pl. Col. v*, pl. 532 (1832); Sharpe, ed. Layard's *B. S. Afr.* p. 638 (1884); W. Ayres, *Ibis*, 1887, p. 61; Nicolls & Eglington, *Sportsm. S. Afr.* p. 118, fig. 40 (1892); Shelley, *B. Afr.* i, p. 185 (1896); Millais, *Breath from the Veldt*, 2nd ed., p. 49 with plate on p. 51 (1899); Reichenow, *Vög. Afr.* i, p. 251 (1900); Haagner, *Ibis*, 1902, p. 574.

Eupodotis cærulescens, Layard, *B. S. Afr.* p. 285 (1867); Gurney, *Ibis*, 1868, p. 48 [Natal]; Buckley, *Ibis*, 1874, p. 385; Oates, *Matabele-land*, p. 326 (1881).

Trachelotis cærulescens, Sharpe, *Cat. B. M.* xxiii, p. 308 (1894); Woodward Bros., *Natal Bds.* p. 177 (1899); Sharpe, *Ibis*, 1904, p. 15 [Deelfontein].

Description. *Adult Male.*—Crown of the head black in front becoming slaty and then slaty-blue, which colour extends down the neck and all round in its lower half on to the breast and under parts; chin, sides of the face, including the eyebrows and the ear-coverts, white with two black streaks below the eye and in the moustachial region; below the white of the chin is a considerable black patch on the throat; back, rump and wing finely vermiculated dark brown and sandy-rufous; on the greater coverts the rufous becomes richer and the brown vermiculation much less; edge of the wing and primary coverts slaty-blue, the latter blacker towards the tips; wing-quills black with slaty-blue bases, the latter increasing in extent on the inner primaries and secondaries; tail-feathers tawny-rufous at the base, black towards the tip, except the central pair which are vermiculated like the back at the tips; below slaty-blue throughout, under tail-coverts with tawny bases and quill-lining pale slaty.

Iris dusky, with an outer ring of tawny; bill dusky, pale at the base; tarsi and feet yellow.

Length about 22·5; wing 13·25; culmen 1·15; tarsus 3·5.

The female closely resembles the male, but the ear-coverts, sides of the face and eyebrows are pale rufous, and the crown is slightly spotted with sandy. Wing 13·0; tarsus 3·3.

Distribution.—The Blue Knorhaan appears to be rather a rare bird, sparingly distributed over Cape Colony, the upper portion of Natal, the Orange River Colony and the South of the Transvaal.

The following are recorded localities: Cape Colony—Riversdale (Layard), Hanover division, July, and Beaufort West (S. A. Mus.), Deelfontein (Seimund); Natal—Sunday River near Ladysmith (Oates); Orange River Colony—Rhenoster River (W. Ayres). Vredefort Road (B. Hamilton); Transvaal—Klip river near Johannesburg, April (Haagner), Potchefstroom and Heidelberg districts (Gilfillan).



FIG. 96.—*Otis caerulescens*.

Habits.—The Blue Knorhaan is found along the banks of streams, and also on the open veld and on stony hills. It is not so noisy as some of the other Knorhaans; it is stated by some writers to be somewhat shy and difficult to approach, except by the well-known method of gradually circling round it. Millais, on the contrary, found it tame and unsuspicious; he also illustrates its method of making off when alarmed, with its head lowered.

Major Sparrow tells me that he found two nests of this bird in the Orange River Colony at Linana near Winburg on August 21st and near Lindley on December 17th. In each case there were two eggs found, of a pale brown colour, with a greenish tinge streaked with darker; they measured about $2\cdot4 \times 1\cdot6$.

700. *Otis barrovii.* Barrow's Knorhaan.

Otis barrovii, *J. E. Gray*, in *Griffith's A. K.* viii, p. 304 (1829); *Shelley, B. Afr.* i, p. 186 (1896); *Reichenow, Vög. Afr.* i, p. 250 (1900).

Eupodotis senegalensis (*nec Vieill.*), *Layard, B. S. Afr.* p. 285 (1867); *Gurney, Ibis*, 1868, p. 48 [Natal]; *Ayres, Ibis*, 1869, p. 298, 1880, p. 265; *Holub & Pelz., Orn. Süd-Afr.* p. 239 (1882); *Bryden, Gun and Camera*, p. 481 (1893).

Eupodotis cærulescens (*nec Vicill.*), *Butler, Feilden and Reid, Zool.* 1882, p. 340.

Otis senegalensis, *Sharpe, ed. Layard's B. S. Afr.* p. 639 (1884); *Millais, Breath from the Veldt*, 2nd ed., p. 54, figured as "Vaal Knorhaan" (1899).

Trachelotis barrovii, *Sharpe, Cat. B. M.* xxiii, p. 311 (1894); *Oates, Cat. B. Eggs*, ii, p. 367 (1902); *Mitchell, P. Z. S.*, 1904, i, p. 4.

Description. *Adult Male.*—Crown and occiput slaty-blue, surrounded by a line of black more or less conspicuous; the feathers somewhat elongated and erectile, forming a crest; chin, sides of the face, including lores, eyebrows and ear-coverts white; below this, across the throat, is a transversely elongated black band which almost touches posteriorly the black feathers of the crest; hind-neck tawny-rufous; back and wings freckled black and sandy-rufous with a tendency to form transverse bands on the longer secondaries; wing-coverts tawny without freckling; primary coverts and wing-quills black; the former tawny at their bases, the latter with patches of tawny, fading to white on the inner webs of the inner primaries and outer secondaries; tail feathers tawny at the base, black at the tip except the centre ones, which are freckled pale rufous and black with two narrow transverse bands; below the fore-neck and chest are slaty-blue with a patch of tawny on either side, the rest of the lower surface, including the under wing-coverts, axillaries and quill-lining is white. All over the back of this bird is a slight pink iridescence.

Iris light brown; bill yellowish, dusky on the culmen; legs and feet yellowish-white.

Length about 21·0; wing 11·5; tail 5·0; tarsus 3·4; culmen 1·3.

A young bird has the crown dusky, freckled especially posteriorly with pale rufous; the ear-coverts, lores and eyebrows are pale tawny, the black patch on the throat is smaller and freckled with white; the fore-neck is not slaty-blue but tawny-rufous like the hind-neck and slightly freckled with brown; the central tail feathers have three black cross-bars on a freckled ground; the outer rectrices have two cross-bars, the subterminal one, the broader, and the basal portion and extreme tip of the feathers being slightly freckled. Wing 10·5; tarsus 3·30.

An examination of the specimens in the South African Museum leads to the conclusion that the adult males and females are alike, the younger birds are as described above.

Distribution.—This species is found over much the same area as the Blue Knorhaan, from the central portion of the Colony to the Transvaal, but not north of the Limpopo.

The following are localities: Cape Colony—Tarka division (Krebs), Albany (S. A. Mus.), Mafeking division (Bryden); Natal—Ladysmith and Newcastle (Butler, Feilden and Reid); Orange River Colony—Vrededorp Road (B. Hamilton); Transvaal—Swaziland (Buckley), Potchefstroom (Ayres), Bank and Marico (S. A. Mus.), Piet Retief district, common, August (Crawshay in S. A. Mus.); Bechuanaland—Kanye (Exton).

Habits.—Butler states that this bird is the commonest of the Knorhaans in the upper part of Natal; he found it wild and difficult to approach. When they get up they utter a harsh note resembling the words "Kuk-pa-wow," repeating the call several times as they fly away; the crop of one examined by Feilden was full of insects, chiefly beetles.

Capt. R. Crawshay, in the *Field*, states that he has found a quantity of formic acid about the bills and feet of these birds, and concludes that they feed on ants and termites.

Ayres informs us that two eggs are laid by this Bustard in open country under the shelter of a tuft of grass, and that they vary considerably in colour and markings.

701. *Otis kori. Gom Paauw.*

Otis kori, Burchell, *Travels*, i, p. 393, sketch on p. 402 (1822); Rüppell, *Mus. Senck.* ii, p. 213, pl. 13 (1834); Murie, *P. Z. S.* 1868, p. 471; Oates, *Matabeleland*, p. 326 (1881); Butler, *Feilden and Reid, Zool. 1882*, p. 339; Sharpe, ed. *Layard's B. S. Afr.* p. 632 (1884); Bryden, *Kloof and Karoo*, pp. 306, 316 (1889); Distant, *Nat. Transvaal*,

- p. 74 (1892); Nicolls and Eglington, *Sportsm. S. Afr.* p. 112 (1892); Bryden, *Gun and Camera*, pp. 468, 478 (1893); Fleck, *Journ. Ornith.* 1894, pp. 368, 384; Kirby, *Haunts Wild Game*, p. 560 (1896); Rendall, *Ibis*, 1896, p. 175; Woodward Bros., *Ibis*, 1897, p. 418; Reichenow, *Vög. Afr.* i, p. 242 (1900); Haagner, *Ibis*, 1902, p. 574.
Eupodotis cristata, Layard, *B. S. Afr.* p. 283 (1867); Ayres, *Ibis*, 1869, p. 298, 1877, p. 346.
Eupodotis kori, Gurney, in Andersson's *B. Damaral*. p. 258 (1872); Buckley, *Ibis*, 1876, p. 133; Holub & Pelzeln, *Orn. Süd-Afr.* p. 284 (1882); Shelley, *Ibis*, 1882, p. 361 [Mashonaland]; Sharpe, *Cat. B. M.* xxiii, p. 324 (1894); Shelley, *B. Afr.* i, p. 186 (1896); Woodward Bros., *Natal B.* p. 178 (1899); Marshall, *Ibis*, 1900, p. 264; Oates, *Cat. B. Eggs*, ii, p. 367 (1902).
 "Gom-Paauw" (*i.e.*, Gum Peacock, because it feeds on Mimosa gum) of the Colonists; "Isemi" of Kaffirs generally; "Kori" of Bechuanas (Burchell).

Description. *Adult Male*.—The largest of all the South African Bustards. Crown of the head black, the feathers elongate and lanceolate, forming a conspicuous crest, a slightly paler line down the centre; sides of the head, including the eyebrow, ear-coverts, and a few of the longer crest-feathers and neck all round extending on to the upper breast, white with narrow transverse bands; all the feathers round the neck are long, loose and decomposed; back and wings very dark brown, with the usual pale sandy vermiculations; median and greater coverts white mottled with black and grey, with a broad black subterminal bar before the white tip; quills dark brown, the inner ones with a good deal of white on the inner web, and the outer secondaries tipped with white as well; tail-feathers with brown bases and four narrow brown transverse bands; the intermediate spaces being either white, or white freckled with dark brown; below, across the breast, a transverse band of dark brown more or less complete; rest of the lower surface, including axillaries and under wing-coverts white.

Iris lemon-yellow, paler towards the centre; bill light horn; feet light yellowish.

Length about 57·0; wing 31·0; tail 13·5; culmen 4·0; tarsus 7·9; spread of wings 8 feet 4 inches; weight 30 lbs. (Andersson and S. A. Mus.), 40 lbs. (Buxton according to Gurney), 42 lbs. (Trevelyan).

The female resembles the male, but is much smaller; length about 44·0; wing 23·5; tarsus 6·35.

Distribution.—This large Bustard, though nowhere common, is generally distributed all over South Africa; beyond our limits its

range extends to Southern Angola on the west, and through Central and East Africa to Shoa and Somaliland on the east.

The following are South African localities; Cape Colony—confluence of the Orange and Vaal Rivers, October, 1811 (Burchell type), Cape division, Piquetberg and Beaufort West (S. A. Mus.), Little Namaqualand, rare (Howard), Jensenville (Bryden), Albany (Trevelyan); Natal—Newcastle district (Butler), Upper Umkomas (Woodward), St. Lucia Lake in Zululand (Woodward); Transvaal—near Klerksdorp (Holub), Pretoria district (Distant), near Johannesburg, rare (Haagner), Lydenburg bushveld (Kirby and Rendall);

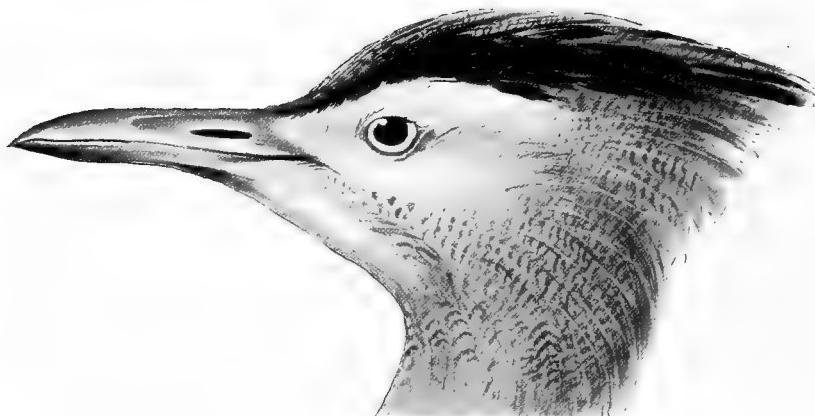


FIG. 97.—Head of *Otis kori*. $\times \frac{2}{3}$.

Bechuanaland—Confluence of Notuani and Limpopo (Holub), Palapye, May (Oates), Botletli River (Bryden); Rhodesia—Mashonaland (Ayres and Marshall); German South-west Africa—Great Namaqualand and Damaraland to Ondonga (Andersson), Kalahari, May, Reheboth, April (Fleck).

Habits.—This, the noblest and finest of all South African Game Birds, is now becoming rather rare. It is found singly or in pairs, or sometimes in small companies of three or four birds. Its favourite resorts are open plains with scattered Mimosa-bush. It is specially fond of a sweet gummy exudation from these trees, and has thus earned its vernacular name of Gom, or Gum Paauw. It appears to be partially migratory, its movements probably depending on rainfall. Its flight is heavy, but rapid for so large a bird, and Andersson states

that at night when changing its feeding ground it can sometimes be seen flying at a great height above the ground. It also runs with great speed, using its wings to aid it in balancing, like an Ostrich. In addition to the gum above mentioned it feeds on locusts and other large insects and reptiles and snakes of considerable size. Though it seems to have escaped the notice of most South African observers, there can be no doubt that the Gom Paauw possesses a gular pouch ; this is a sac, or bag, lying in the front of the throat and opening under the tongue into the mouth cavity ; it can be inflated at the will of the bird, and is probably so used during the breeding season. The Great Bustard of Europe has a similar pouch, which is inflated during the breeding season, swelling the neck to a very large size. Curiously enough, however, in the case of another species, the Australian Bustard, the swelling of the neck is due to the filling and blowing out of the æsophagus itself, the gular pouch being entirely absent.

Like other members of this family, the Gom Paauw makes no nest, but lays its eggs, two in number, on the bare ground in a slight hollow. There are three eggs in the South African Museum, one of which was obtained at Nelspoort, in Beaufort West, by Mr. Jackson. They are ovals, almost equally rounded at both ends ; the ground colour is a pale olive-brown, sparingly mottled with a darker shade of the same colour in the one case, in the other more heavily blotched with purplish and yellowish-brown. They measure 3·4 to 3·5 × 2·4.

Order XVI. LIMICOLÆ.

The birds included in this Order are chiefly shore- and marsh-haunting forms, such as Snipes, Sandpipers, Plovers and their allies ; to these are added the Stone-Curlews, Crab-Plovers, Jacanas, Coursers and Pratincoles, as well as the members of the two other families not represented in our fauna—the *Chionidæ* or Sheathbills of the Antarctic Islands, and the extreme southern parts of South America, and the *Thinocorythidæ* confined to South America.

The members of this Order are characterised by a bill which is usually slender and has on each side a groove with the nostril opening at its base ; the wings are generally long, and there are always eleven primaries ; the legs, too, are generally long and the lower portion of the tibia naked ; the toes are three or four in

number and are sometimes fully webbed, sometimes not webbed, but more often partially webbed.

The anatomical characters are as follows : Skull schizognathous, and usually schizorhinal, basipterygoid processes present or absent, sternum usually with two notches ; contour-feathers with an after-shaft ; no fifth cubital remex to the wing ; cæca present, as a rule ; oil gland tufted ; two carotids ; hallux, if present, connected with the flexor longus hallucis, and not with the flexor perforans digitorum.

The Limicolæ appear to be allied, on the one hand, to the Gulls, and on the other to be connected through the Stone Plovers with the Bustards ; indeed, many authors remove the Stone Plovers altogether from the present Order and place them with the Otides.

The South African representatives of this Order are arranged here in five families, while two others already mentioned do not come within our purview. The bulk of the genera and species, however, all fall into one of these families, the *Charadriidæ*, so that it is necessary, for purposes of convenience, to divide this again into sub-families.

Key of Genera.

- A. Tarsus covered with hexagonal scales before and behind, no transverse scutes.
 - a. A small hind toe present.
 - a¹. Bill very long, more than twice the length of the middle toe and claw, mandible up-curved at the tip *Recurvirostra*, p. 382.
 - b¹. Bill about as long as the middle toe and claw, culmen nearly straight, not up-curved *Squatarola*, p. 359.
 - b. No hind toe.
 - a¹. With a distinct dertrum, or swelling, at the tip of the mandibles.
 - a². A sharp-pointed carpal spur at the bend of the wing *Hoplopterus*, p. 351.
 - b². Carpal spur represented by a blunt projection only.
 - a³. Inner secondaries broad and rounded ; distance between the shortest secondary and the longest primary not equal to half the length of the wing... *Stephanibyx*, p. 354.
 - b³. Inner secondaries long and pointed ; distance between the shortest secondary and the longest primary more than half the length of the wing *Ægialitis*, p. 361.
 - b¹. With no dertrum.
 - a². Bill compressed and stout, longer than the tarsus *Hæmatopus*, p. 377.

- b*². Bill slender and pointed, shorter than the tarsus but twice the length of the head..... *Himantopus*, p. 380.
 - c*². Bill short and stout, not as long as the head..... *Ædicnemus*, p. 315.
 - B. Tarsus clothed with transverse scutes anteriorly, reticulate posteriorly.
 - a. No hind toe ; facial wattles and a carpal spine present
 - b. Hind toe present.
 - a*¹. Bill with a distinct dertrum.
 - a*². Facial wattles and a strong carpal spine
 - b*². No facial wattles, but a strong carpal spine
 - b*¹. Bill with no dertrum.
 - a*². Bill straight and conical, about as long as the head
 - b*². Bill far longer than the head and down-curved.....
 - C. Tarsus with transverse scutes before and behind.
 - a. A web between the anterior toes more or less developed.
 - a*¹. No hind toe.
 - a*². Bill with the lower mandible down-curved, in correspondence with the upper
 - b*². Bill with the lower mandible not down-curved.....
 - b*¹. Hind toe present.
 - a*². Bill stout and strong, longer than the head ; tarsus long, more than twice the length of the middle toe and claw.....
 - b*². Bill stout and very short, about half the length of the head ; tarsus short, hardly longer than the middle toe and claw.
 - a*³. Tail strongly forked, outer tail feathers half as long again as the inner ones ...
 - b*³. Tail nearly square, outer tail feathers only slightly longer than the inner ones.....
 - c*². Bill long and slender, about as long as the head, or longer ; tarsus moderate, never twice the length of the middle toe and claw.
 - a*³. Sexes of equal size
 - b*³. Male with a remarkable sexual breeding dress, and always larger than the female.....
- Xiphidiopterus*, p. 348.
- Lobivanellus*, p. 345.
- Hemiparra*, p. 350.
- Arenaria*, p. 342.
- Numenius*, p. 385.
- Cursorius*, p. 322.
- Rhinoptilus*, p. 326.
- Dromas*, p. 320.
- Glareola*, p. 332.
- Galactochrysea*, p. 336.
- Totanus*, p. 389.
- Pavoncella*, p. 401.

- b.* No web between the anterior toes.
- a¹.* Hind toe absent *Calidris*, p. 410.
- b¹.* Hind toe present.
- a².* Toes long, far exceeding the tarsus in length.
- a³.* With a frontal shield..... *Actophilus*, p. 337.
- b³.* No frontal shield *Microparra*, p. 341.
- b².* Toes moderate, tarsus about equal to or exceeding the middle toe and claw.
- a³.* Ear opening well behind the level of the hinder edge of the eye
- b³.* Eye placed far back, so that the ear opening just touches the level of the hinder edge of the eye.
- a⁴.* Tail feathers 16 (in South African species), outer ones narrowed
- b⁴.* Tail feathers 10, outer ones not narrowed
- Gallinago*, p. 412.
- Rostratula*, p. 418.

Family I. ŒDICNEMIDÆ.

Skull holorrhinal; nostrils pervious; no basipterygoid processes, and sixteen cervical vertebrae. The external characters are given in the description of the single South African genus.

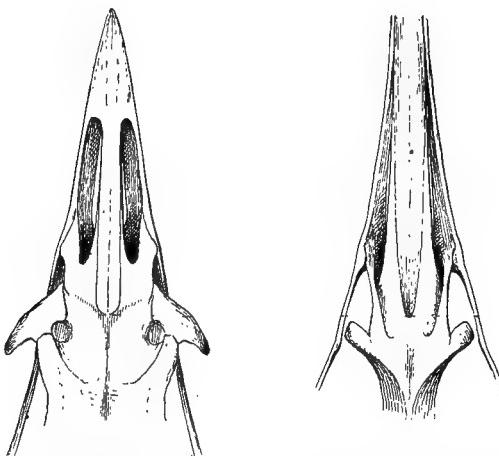


FIG. 98.—Front half of the skulls of *Œdicnemus* and of *Numenius*, from above, to show the difference between holorrhinal and schizorrhinal nostrils; in the former the posterior end of the nasal opening is evenly rounded off, in the latter this portion of the aperture is slitlike.

Genus I. ŒDICNEMUS.

*Type.***Œdicnemus**, *Temm. Man. d'Orn.* p. 321 (1815)..... *Œ. crepitans*.

Bill stout and strong, broader at the base than high, hardly as long as the head and half the length of the tarsus; nostrils linear ovals in a shallow groove and pervious; eyes very large; wings long and pointed, the first primary falling but little short of the second, which is usually the longest; tail of twelve feathers considerably graduated; tarsus long, covered before and behind with reticulate scales; no hind toe; claw of middle toe broad and dilated on its inner side.

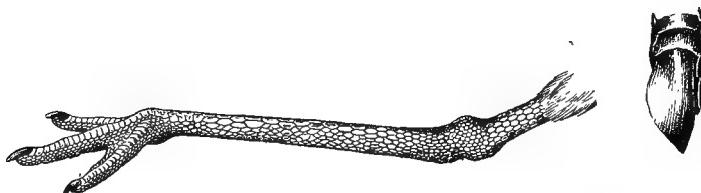


FIG. 99.—Left foot of *Œdicnemus capensis* ($\times \frac{1}{2}$), together with the claw of the middle toe, from above, enlarged to show the dilation.

Eight species of Stone Curlews or Stone-Plovers, spread over the temperate and tropical portions of the Old World and Central and South America have been described. Two of these come within our limits.

Key of the Species.

- A. Larger, wing about 9; back rufous with black markings which tend to form bars *Œ. capensis*, p. 315.
- B. Smaller, wing about 8; back vermiculated with two shades of brown, and with dark brown shaft-marks *Œ. vermiculatus*, p. 318.

702. **Œdicnemus capensis.** *Dikkop.*

Œdicnemus capensis, *Licht. Verz. Doubl.* p. 69 (1823); *Gurney in Andersson's B. Damara*l. p. 266 (1872); *Ayres, Ibis*, 1874, p. 104, 1880, p. 111; *Oates, Matabeleland*, p. 326 (1881); *Butler, Feilden and Reid, Zool.* 1882, p. 340; *Shelley, Ibis*, 1882, p. 363 [Spaldings and Buluwayo]; *Holub & Pelz. Orn. Süd-Afr.* p. 236 (1882); *Sharpe, ed. Layard's B. S. Afr.* pp. 645, 855 (1884); *Seeböhm, Geogr. Distr. Charadr.* p. 81, with text figure (1888); *Nicolls and Eglington,*

Sportsm. S. A. p. 120 (1892); *Fleck, Journ. Ornith.* 1894, p. 382; *Sharpe, Cat. B. M.* xxiv, p. 15 (1896); *Shelley, B. Afr.* i, p. 194 (1896); *Bryden, Nat. and Sport*, p. 50 (1897); *Woodward Bros., Natal Bds.* p. 179 (1899); *Marshall, Ibis*, 1900, p. 264; *Oates, Cat. B. Eggs*, ii, pp. 82, 364 (1902); *Reichenow, Vög. Afr.* i, p. 198, (1900); *Haagner, Ibis*, 1902, p. 580; *Whitehead, Ibis*, 1903, p. 235; *Sharpe, Ibis*, 1904, p. 18 [Deelfontein].
 Œdienemus maculosus, *Temm. Pl. Col.* v, pl. 292 (1824); *Gurney, Ibis*, 1860, p. 217 [Natal]; *Layard, B. S. Afr.* p. 288 (1867); *Buckley, Ibis*, 1874, p. 388; *Harting, P. Z. S.* 1874, p. 457; *Drummond, Large Game S. Afr.* p. 412 (1875).
 "Dikkop" or "Thicknee" of colonists; "Inqanqolo" of the Amaxosa (Stanford); "Khoho-a-dira," *i.e.*, Fowl of the Enemy, of the Basutos (Murray).

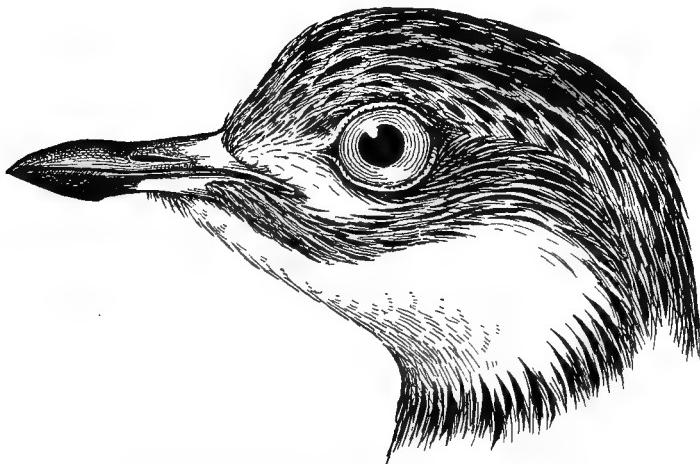


FIG. 100.—Head of *Œdicnemus capensis*. $\times \frac{1}{2}$.

Description. Adult Male.—General colour above pale sandy-rufous, thickly mottled with black which tends to form streaks on the head and neck and bars on the back and wings; wing-coverts like the back; wing-quills and primary coverts black, the outer primaries with a white band extending over each web; some of the inner ones tipped with white; central tail-feathers like the back; the others tipped with black and with a subterminal band of white; eyebrows, lores, a double streak beneath the eye, separated by a black band, chin and throat white; front of the neck sandy-rufous, passing into white on the abdomen, the whole marked with dusky

streaks; under tail-coverts pale cinnamon; axillaries white with dusky shaft-stripes; under wing-coverts white tipped with dusky. Eye very large.

Iris bright yellow; bill black, pale greenish-yellow at the base; legs and feet yellow, dark along the front.

Length 18·5; wing 9·0; tail 4·75; culmen 1·5; tarsus 3·7.

The sexes are alike. Young birds appear to be rather paler throughout.

Distribution.—The Dikkop is found all over South Africa from Cape Town to the Zambesi, but appears to become scarcer in Mashonaland and the extreme north. It is said to be partially migratory but its movements are irregular. Beyond our limits the Dikkop ranges to Angola on the west and through Nyasaland and East Africa as far north as Khartoum and Massowa on the Red Sea in the east, if, as is stated by Reichenow, *Œ. affinis* is identical with our species.

The following are localities: Cape Colony—Cape, Malmesbury, Bredasdorp, Hanover and Namaqualand divisions (S. A. Mus.), Port Elizabeth and East London (Rickard), Colesberg (Ortlepp), Deelfontein, common (Seimund), Orange River near Aliwal North (Whitehead), King William's Town (Trevelyan), Spaldings in Barkly West division, February (Ayres); Natal—Isipingo, Maritzburg and Zululand (Woodward), Newcastle, May, June (Reid); Orange River Colony—Vredefort Road, April (B. Hamilton), Basutoland, early winter (Murray); Transvaal—Pilandsberg, July, Potchefstroom, April and December (Ayres), near Johannesburg (Haagner), Marico and Swaziland (Bt. Mus.); Bechuanaland—Kanye (Exton), Tati (Bradshaw), Nocana, July (Fleck); Rhodesia—Buluwayo, November (Ayres), Mashonaland, scarce (Marshall); German South-west Africa—Great Namaqualand and Damaraland (Andersson); Portuguese East Africa—Tete (Kirk in Bt. Mus.).

Habits.—The Dikkop is found in open country on stony flats or along the slopes of low hills; in the shooting season it is generally met with in small parties, though no doubt it pairs in the breeding time. As a rule it tries to escape notice by crouching, though it runs very well and fast, with curious jerks forward of its head every few yards. When flushed its flight is very silent, but it sometimes utters a loud and somewhat doleful note, "cherara," three times repeated. It is a somewhat nocturnal bird, seeking for its food, which consists of insects and seeds, after dusk. Its flesh, though black, is excellent and much esteemed, so

that it is always shot by sportsmen when met with, and generally considered as a game bird. The eggs, two in number, are laid on the bare ground in a slight excavation, and the young birds run as soon as hatched, and are of an ashy-grey colour.

Dr. Stark found the eggs of this bird at Hondeklip Bay on the shores of Namaqualand on September 16th, and at Hoetjes Bay in Saldanha Bay on September 26th. In both cases the eggs were laid in a slight hollow in the sand near the sea, sheltered by tufts of grass; the two eggs were about half an inch apart from one another and lay parallel with one another, the small ends pointing in opposite directions. These eggs are now in the South African Museum; they are pale stony-grey, varyingly blotched with patches and smaller irregular spots of rich deep brown; they average $2\cdot2 \times 1\cdot6$.

703. **Œdicnemus vermiculatus.** *Water Dikkop.*

Œdicnemus natalensis, Gray, *List Grallæ B. M.* p. 59 (1844); [nom. nud.]

Œdicnemus senegalensis (*nec Swains.*) Grill, *K. Vet. Akad. Handl. Stockholm*, ii. no. 10, p. 53 (1858) [*Knysna*]; Kirk, *Ibis*, 1864, p. 331; Gurney, *Ibis*, 1865, p. 270 [*Durban*], 1868, p. 254; Layard, *Ibis*, 1869, p. 76; Sharpe, ed. *Layard's B. S. Afr.* p. 646 (1884).

Œdicnemus vermiculatus, Cabanis, *Journ. Ornith.* 1868, p. 413; *id. Von der Decken's Reise*, iii, p. 46, pl. 16 (1870); Finsch & Hartl. *Vög. Ost-Afrikas*, p. 622 (1870); Shelley, *Ibis*, 1882, p. 362 [*Mashonaland*]; Sharpe, ed. *Layard's B. S. Afr.* p. 647 (1884); Seeböhm, *Ibis*, 1887, p. 338; *id. Geogr. Distr. Charadr.* p. 80 (1888); Fleck, *Journ. Ornith.* 1894, p. 382; Sharpe, *Cat. B. M.* xxiv, p. 11 (1896); Shelley, *B. Afr.* i. p. 194 (1896); Sharpe, *Ibis*, 1897, p. 516 [*Ivuna River*]; Woodward Bros. *Natal B.* p. 179 (1899); Reichenow, *Vög. Afr.* i, p. 200 (1900); Shortridge, *Ibis*, 1904, p. 202.

Description. *Adult Male.*—General colour above sandy-brown, vermiculated with dusky and with conspicuous black shaft-marks to all the feathers; wing-coverts slaty grey, also with black shaft-marks, and tipped with black; wing-quills and greater coverts black, the first three quills with a broad transverse band of white; central tail-feathers like the back, the outer ones tipped with black and with a subterminal dash of white; eyebrow and band below the eye, chin, throat and abdomen white, the breast and under tail-coverts pale sandy, the former with strong dusky shaft-marks; axillaries, edge of the wing and under wing-coverts white, a few of the latter tipped with dusky.

Iris pale green; bill black, yellowish at the base; legs pale greenish-slate.

Length (in flesh) 15·0; wing 8·0; tail 4·25; culmen 1·75; tarsus 3·0.

The female is somewhat duller in plumage than the male, but of about the same size.

Distribution.—The Water Dikkop is found all over South and East Africa as far north as Loango on the west, Victoria Nyanza in the centre, and Mombasa on the east. Though widely distributed in South Africa it appears to be always a somewhat rare bird, and is not found on the high veld or far away from large rivers or the sea.

The following are localities: Cape Colony—Bredasdorp (S. A. Mus.), Knysna in March (Victorin), in October (Marais), Port Elizabeth, rare (Brown), King William's Town (Bt. Mus.), St. John's River, April (Shortridge); Natal—Durban, June and July (Ayres), Umgeni River mouth (Seeböhm), Ivuna River in Zululand (Woodward); Transvaal—Sabi River, June (Francis, in S. A. Mus.); Bechuanaland—Nocana, July (Fleck); Rhodesia—Quaequae River and Umfuli River, October (Ayres); Portuguese East Africa—Tete (Kirk).

Habits.—The Water Dikkop is nowhere very common; it is nearly always found in pairs or in small parties about the mouths or along the banks of rivers, where it finds its food, which consists of small insects and crustacea. It is very shy and runs swiftly out of sight, concealing itself among low trees and shrubs which line the river banks. Ayres noticed that it was only found about Durban Harbour in winter (June and July), and Mr. Shortridge tells me he has only seen it on the St. John's River, some distance from the mouth, in April. It is probably partially migratory.

Two eggs of this species in the South African Museum were obtained by Mr. Eriksson on the Cunene River; they were laid on the bare ground within a couple of feet of the water. They are somewhat smooth and shiny, of a very pale sandy brown ground-colour, heavily blotched and spotted with a very much darker shade of brown. They are slightly pointed at one end, and measure 1·90 × 1·35.

Family II. DROMADIDÆ.

Skull schizorhinal, nostrils pervious, perforated in the bill itself; no basipterygoid processes; fifteen cervical vertebræ; egg white, laid in a hole dug in the sand.

This Family contains only one genus and species, concerning the systematic position of which there has been some controversy; Blyth considered that it was related to the Terns, chiefly on account of its plumage, but later naturalists, such as Milne-Edwards, Gadow and Fürbringer, are all agreed as to placing it in the present Order, though some uncertainty still exists as to its exact position. It is perhaps best to devote a special family to its reception.

Genus I. DROMAS.

Type.

- Dromas**, Paykull, *K. Vet. Akad. Handl. Stockh.* xxvi,
p. 188 (1805) *D. ardeola*.

Bill stout and strong, considerably longer than the head, broader than high at the base; culmen only slightly curved; nostrils at the front end of a shallow depression near the base of the bill; wings



FIG. 101.—Right foot of *Dromas ardeola*, from inside. $\times \frac{1}{2}$.

long and pointed, first primary the longest; tarsus long with transverse scutes before and behind; hind toe present, three anterior toes with a basal web between them reaching almost half their length; claw of the middle toe swollen and somewhat flattened, pectinated or notched on the inner side feathers of the interscapular region elongated and decomposed. Only the one species here described belongs to this genus.

704. *Dromas ardeola.* *Crab Plover.*

Dromas ardeola, *Paykull*, *K. Vet. Akad. Handl. Stockh.* xxvi, pp. 182, 184, pl. 8 (1805); *Gurney*, *Ibis*, 1865, p. 270 [Natal Coast]; *Layard*, *B. S. Afr.* p. 372 (1867); *Sharpe*, ed. *Layard's B. S. Afr.* p. 694 (1884); *id. Cat. B. M.* xxiv, p. 28 (1896); *Shelley*, *B. Afr.* i, p. 194 (1896); *Reichenow*, *Vög. Afr.* i, p. 202 (1900).

Description. *Adult Male.*—Head and neck all round, wings, including the coverts, scapulars and inner secondaries, rump, upper tail-coverts and tail and the whole of the lower surface white; mantle black, the feathers elongated to form long plumes covering the centre of the back; wing-quills, primary coverts and bastard wing black; the shafts of the primaries white and the inner webs ashy.

Iris dusky; bill black; legs and feet bluish-ash.

Length about 15·5; wing 8·0; tail 3·0; tarsus 3·55; culmen 2·1.

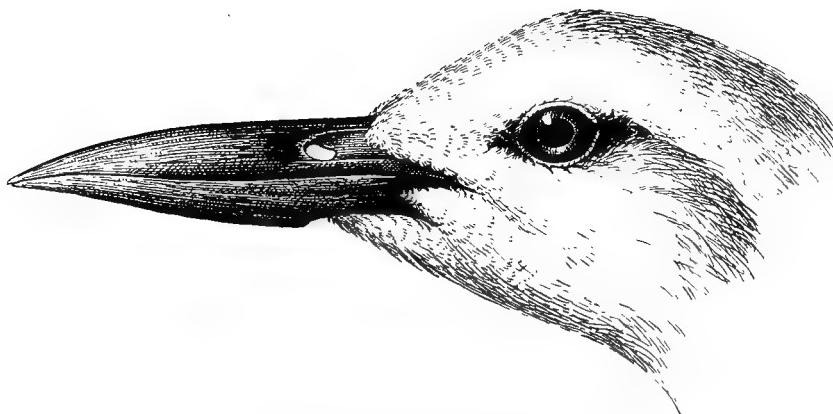


FIG. 102.—Head of *Dromas ardeola*. $\times \frac{1}{2}$.

The female is rather smaller and the mantle plumes are not so well developed.

The young bird has the head and nape streaked with greyish-black and the mantle grey instead of black.

Distribution.—The Crab Plover is found along the coasts of the Indian Ocean, including the Red Sea and Persian Gulf, from the Andamans and Nicobars to Madagascar and Natal. It has only once been recorded from within our limits. Ayres met with a single specimen nearly forty years ago on the seashore near Durban. It is probably only an accidental visitor so far south.

Habits. — Blanford gives the following notice of the rather remarkable habits of this bird: “The Crab Plover keeps to the seashore or the margin of salt lakes, and is found as a rule in small or large flocks sometimes much scattered. It feeds chiefly on crabs. It runs actively and flies well, occasionally uttering a low, rather musical call. This bird breeds in the Persian Gulf and in Ceylon about May, and lays a single egg at the end of a hole in sand near the shore. The hole is dug by the bird obliquely in the form of a bow, curving up towards the end, which is about four feet from the entrance; there is no lining to the nest. The egg is pure white and remarkably large for size of the bird, measuring 2·54 × 1·77.

Family III. GLAREOLIDÆ.

Skull (in all South African genera) schizognathous, no basipterygoid processes; nostrils impervious, situated in a depression, not in a groove; tarsus transversely shielded before and behind, claw of the middle toe pectinated; hind toe present or absent; fifteen cervical vertebrae.

Subfamily I. CURSORIINÆ.

No hind toe; tarsus long, about one-third of the length of the wing.

Genus I. CURSORIUS.

Cursorius, Lath., *Index Orn.* ii, p. 751 (1790). *Type.*
C. gallicus.

Bill long and gently down-curved, slightly shorter than the middle toe and claw, lower mandible also curved in correspondence; nostrils oval and pervious, placed in a slight depression at

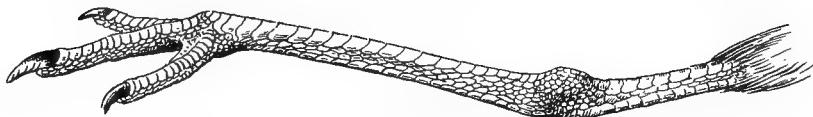


FIG. 103. Right foot of *Cursorius rufus*. $\times \frac{1}{2}$.

the base of the bill; wings long and pointed, the first primary about equal to or slightly exceeding the second; tail short and square; tarsus and bare portion of the tibia with transverse scutes anteriorly

and posteriorly; no hind toe; claw of the middle digit strongly pectinated; a small basal web between the middle and outer toes.

The members of this genus, five in number, are distributed over the whole of Africa up to the Mediterranean, including the Canary and Cape Verde Islands, and eastwards through Arabia and Persia to India and Ceylon. Two species are met with in South Africa.

Key of the Species.

- A. Front half of the crown chestnut-brown, hind half slaty-blue, white tip of the secondaries broad, extending right across the feather *C. rufus*, p. 323.
- B. Crown rich chestnut throughout; white tips of the secondaries wedge-shaped and very much restricted *C. temmincki*, p. 325.

705. **Cursorius rufus.** *Burchell's Courser.*

Cursorius rufus, Gould, P. Z. S. 1836, p. 81; *id. Icon. Av. pl. 10* (1837); Ayres, *Ibis*, 1869, p. 299, 1871, p. 269, 1877, p. 347, 1880, p. 111, 1885, p. 347; Sharpe, ed. Layard's B. S. Afr. pp. 653, 855 (1884); Seeböhm, *Ibis*, 1886, p. 117, 1887, p. 344; Symonds, *Ibis*, 1887, p. 334; Seeböhm, *Geogr. Distr. Charadr.* p. 238 (1888); Sharpe, *Cat. B. M.* xxiv, p. 38 (1896); Shelley, *B. Afr. i*, p. 194 (1896); Woodward Bros., *Natal Bds.* p. 180 (1899); Reichenow, *Vög. Afr. i*, p. 155 (1900); Haagner, *Ibis*, 1902, pp. 574, 580; Oates, *Cat. B. Eggs*, ii, p. 361 (1902); Whitehead, *Ibis*, 1903, p. 235; Sharpe, *Ibis*, 1904, p. 11 [Deelfontein].

Tachydromus burchellii, Swains., *An. in Menag.* p. 340 (1858).

Cursorius burchelli, Gurney, *Ibis*, 1860, p. 217; Layard, *B. S. Afr.* p. 289 (1867); Holub & Pelz, *Orn. Süd-Afr.* p. 246 (1882); Butler, Feilden and Reid, *Zool.* 1882, p. 340; Bryden, *Nature and Sport*, p. 86 (1897).

Description. Adult Male.—General colour above rufous-brown, the front part of the head and the hind-neck of a somewhat richer shade; occiput and nape slaty-blue surrounded by a band of black and then a band of white which extends forward over the eye, and finally a second band of black; primary coverts and bastard wing black, secondaries ashy-brown with broad white tips increasing towards the innermost; upper tail-coverts and tail ashy-brown, the central feathers with a darker terminal spot, the outer ones with a subterminal dusky spot and white tip; below, throat, abdomen, thighs and under tail-coverts white; the breast like the back but somewhat paler with a strong black patch on the lower breast; axillaries ashy with paler tips; under wing-coverts black.

Iris dark brown; bill dusky; legs and feet white.
 Length about 8·25; wing 5·25; tail 1·8; tarsus 1·9; culmen 0·9.
 The female resembles the male in plumage and measurements.

A young bird is brownish above, somewhat mottled with black, especially on the head; no slaty-blue on the nape, or black or white bands surrounding the nape patch; the secondaries as in the adult; the tail is ashy, the tips of the feathers black with sandy spots along both webs; below, as in the adult, but the chin rather greyer.

Distribution.—Burchell's Courser is confined to South Africa. It is abundant on the high veld of the Colony, Natal, Orange River Colony and Transvaal, and appears to descend to the lower levels occasionally. It has not been noticed, so far as I am aware, north of the Limpopo except in one record—a specimen in the British Museum labelled "Makalaka county," obtained by Bradshaw.

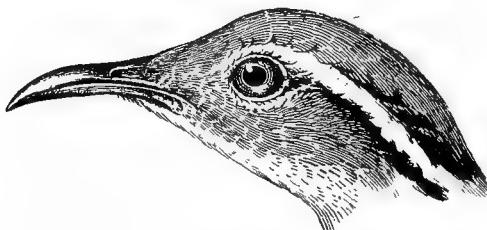


FIG. 104.—Head of *Cursorius rufus*. $\times \frac{1}{2}$.

This individual may quite possibly be wrongly labelled, and have been really obtained on the Orange River, where Bradshaw also collected.

The following are recorded localities: Cape Colony—Nelspoort and Colesberg (Layard), Deelfontein, March and May, not common (Seimund), Port Elizabeth (Rickard), King William's Town (Trevelyan), Orange River near Upington, January (Bradshaw) near Hopetown, May (Atmore), and near Aliwal North, winter (Whitehead), Kuruman (Bt. Mus.); Natal—Newcastle (Butler), Mooi river, breeding October (Sparrow), Maritzburg (Fitzsimmons); Orange River Colony—Kroonstad (Symonds), Vrededorp Road, April (B. Hamilton); Transvaal—Potchefstroom, June and November, Rustenburg, July (Ayres), Irene, November (S. A. Mus.), near Johannesburg (Haagner).

Habits.—Burchell's Courser is usually found in small flocks of

from five to twenty birds all over the high veld in open country. It is said to be more abundant in winter than in summer in most parts, and is probably at any rate partially migratory. It runs with very great rapidity, and after making a dash of about twenty yards will stop and bob backwards and forwards, and sway from side to side, as if its first effort had been too much for it; it is difficult to flush and seldom flies far, so that it is fairly easy to approach. It feeds on small seeds and insects, and is specially fond of haunting burnt-off patches of grass.

Burchell's Courser makes no nest, but lays two eggs in a slight depression on the bare ground. Ayres found it breeding at Potchefstroom in November.

Major Sparrow obtained, at Mooi River in Natal on September 25th, a clutch of two eggs which he presented to the South African Museum ; these are rounded ovals without gloss ; the ground colour is a very pale fawn, but it is nearly concealed by the very abundant freckling and scrolling of dark brown and black ; the measurements are 1.15 x 0.95.

706. *Cursorius temmincki*. *Temminck's Courser*.

Cursorius temmincki, Swains., Zool. Illustr. 1st ser. ii, pl. 106 (1822) ; Sharpe, Cat. B. M. xxiv, p. 41 (1896) ; Shelley, B. Afr. i, p. 194 (1896) ; Woodward Bros., Natal B. p. 181 (1899) ; Marshall, Ibis, 1900, p. 264 ; Reichenow, Vög. Afr. i, p. 155 (1900) ; Oates, Cat. B. Eggs, ii, p. 361 (1902).

Tachydromus senegalensis, Licht., Verz. Doubl. p. 72 (1828).

Cursorius burchelli (nec Swains.), Gurney, Ibis, 1860, p. 217 [Natal].

Cursorius senegalensis, Layard, B. S. Afr. p. 290 (1867) ; id. Ibis, 1869 p. 375 ; Gurney, in Andersson's B. Damaral. p. 261 (1872) ; Ayres, Ibis, 1876, p. 433 ; Holub & Pelz., Orn. Süd-Afr. p. 246 (1882) ; Butler, Feilden and Reid, Zool. 1882, p. 341 ; Sharpe, ed. Layard's B. S. Afr. pp. 654, 855 (1884) ; Seeböhm, Geogr. Distr. Charadr. p. 239 (1888) ; Woodward Bros., Ibis, 1898, p. 226.

Description Adult.—Forehead and crown rich rufous, followed by a black nape spot, the whole surrounded by a pale rufous eyebrow which becomes white posteriorly, below this again is a black line running from behind the eye through the ear-coverts and meeting its fellow below the nape ; upper surface brown with an ashy tinge ; primaries and primary-coverts black, secondaries browner with wedge-shaped white tips ; central tail-feathers like the back, outer ones with a subterminal black spot and white or rusty-white tips

the outer pair white on the outer web throughout; below, the chin, flanks, abdomen and under tail-coverts white, the breast rufous-brown, becoming richer posteriorly; a patch of black in the centre of the lower breast, under wing-coverts black, axillaries ashy-brown.

Iris dusky to reddish-brown; bill dusky, paler on the lower mandible; legs and feet white. Length about 8·0; wing 5·0; tail 1·75; culmen 0·8; tarsus 1·6.

The sexes are alike. A young bird has a much paler crown, and there are traces of mottling on the back.

Distribution.—Temminck's Courser, though far more widely spread in Africa than Burchell's, is certainly not so common in South Africa. It has been found in the eastern half of the Colony, in Natal, the Transvaal and Rhodesia, and in the south, at any rate, appears to be a winter visitor only. Beyond our limits it is spread over the greater part of Africa, ranging as far north as the Gold Coast and Senegambia on the west, and to Kordofan and Abyssinia on the east.

The following are recorded localities: Cape Colony—Daggaboer's Nek in the Bedford division (Exton), Port Elizabeth, April to September (Brown), Peddie, March (S. A. Mus.), King William's Town, May (Bt. Mus.); Natal—near Colenso (Reid), Ivuna River in Zululand (Woodward); Transvaal—Komatipoort, January (Francis in S. A. Museum), Macamac, July and Potchefstroom April (Ayres); fairly common in Mashonaland (Marshall); German south-west Africa—Ondonga, November (Andersson).

Habits.—This bird does not appear to possess any special traits of character distinguishing it from Burchell's Courser. It is not known to breed in South Africa.

Genus II. RHINOPTILUS.

Type.

Rhinoptilus, Strickl. P. Z. S., 1850, p. 220..... R. chalcopterus.

Bill shorter than the middle toe, without claw, broad at the base; lower mandible not decurved throughout, but ascending gently from the gonys to the tip; wings long and pointed, the first three primaries sub-equal, the second usually the longest; tail short and square; tarsus and toes as in *Cursorius*; one or two black transverse bands across the chest.

Of this genus, which differs from *Cursorius* in only very slight particulars, eight species are generally recognised, all confined to

Africa, except one found in Southern India; three species occur within our limits.

Key of the Species.

- A. With two black bands across the chest *R. africanus*, p. 327.
- B. With a broad sandy-brown band across the chest, above and below which are narrow chestnut bands *R. seebohmi*, p. 328.
- C. With one black band across the chest; wing-quills tipped with metallic purple *R. chalcopterus*, p. 329.

707. **Rhinoptilus africanus.** *Two-banded Courser.*

Cursorius africanus, Temm., *Cat. Syst. Cab. Orn.* pp. 175, 263 (1807).

Cursorius bicinctus, Temm., *Man. d'Orn.* ii, p. 515 (1820); *Jard. & Selby, Ill. Orn.* i, pl. 48 (1839); *Layard, B. S. Afr.* p. 290 (1867); *id. Ibis*, 1869, p. 76; *Ayres, Ibis*, 1871, p. 263, 1877, p. 347, 1880, p. 266; *Gurney, in Andersson's B. Damaral.* p. 261 (1872); *Barratt, Ibis*, 1876, p. 212; *Holub & Pelz. Orn. Süd-Afr.* p. 247 (1882); *Sharpe, ed. Layard's B. S. Afr.* pp. 654, 855 (1884); *Symonds, Ibis*, 1887, p. 334; *Seebold, Geogr. Distr. Charadr.* p. 242 (1888); *Fleck, Journ. Ornith.* 1894, p. 381; *Bryden, Nat. and Sport*, p. 84 (1897).

Rhinoptilus bicinctus, *Shelley, Ibis*, 1882, p. 363 [Setlagoli River]; *id. B. Afr.* i, p. 195 (1896); *Sharpe, Cat. B. M.* xxiv, p. 43 (1896); *Oates, Cat. B. Eggs*, ii, p. 362 (1902); *Whitehead, Ibis*, 1903, p. 236. *Rhinoptilus africanus*, *Reichenow, Vög. Afr.* i, p. 159 (1900); *Sharpe, Ibis*, 1904, p. 12 [Deelfontein].

Description. *Adult Male.*—General colour above brown, the feathers dusky, edged with pale sandy buff, giving a mottled appearance to the upper surface; four outer primaries and their coverts black, inner primaries and secondaries chestnut, slightly marked towards their tips with dusky; upper tail-coverts white; central tail-feathers blackish, paler towards the tips, two outer pairs almost pure white; eyebrow, cheeks, chin, neck and upper breast whitish, finely mottled and streaked with blackish; across the breast two black bars, the upper one about half the width of the lower; rest of the lower surface, including the space between the black bars buffy-white; axillaries white; under wing-coverts mottled black and white. Iris dark brown; bill black; legs white.

Length (in flesh) 9·0; wing 6·0; tail 2·75; culmen 0·55; tarsus 2·2. The female resembles the male, but is perhaps slightly smaller; wing 5·75; tarsus 2·1.

Distribution.—The Two-banded Courser is confined to South

Africa. It is widely spread over the Karoô districts of the Colony, all over the Orange River Colony, the south-western part of the Transvaal, Bechuanaland and German territory, but is not found in the eastern portion of Cape Colony, Natal, or Rhodesia, so far as our present knowledge goes. Like other Courfers it is probably a partial migrant.

The following are localities: Cape Colony—Beaufort West and Hopetown, May (Bt. Mus.), Deelfontein resident (Seimund), Grahamstown (Layard), Orange River at Upington December, Hanover July, August (S. A. Mus.), and near Aliwal North common (Whitehead), Spaldings in Barkly West district January, and Setlagoli River, near Mafeking January (Ayres); Orange River Colony—Zand River (Barratt), Kroonstad (Symonds), and Vredefort Road June (B. Hamilton); Transvaal—Potchefstroom March, June, October (Ayres); German South-west Africa—Ondonga, January, Otjimbinque, February, Hountop River, June (Andersson), Kransnes, January (Fleck).

Habits.—This little Courser is found in much the same country as Burchell's Courser and has nearly the same habits; it is met with in open country in pairs or small parties, it runs swiftly and is difficult to flush. In most places it is more abundant in the rainy season than in the winter and is probably a partial migrant. It feeds chiefly on ants, and, as I am informed by Major Sparrow, lays one egg only on the bare ground in a slight depression. The South African Museum contains an egg from Vredefort Road, obtained on January 3rd, by Captain Barrett Hamilton. The eggs are very handsome, being pale yellow in colour thickly covered with fine lines, both straight and curved, of a yellowish-brown; the shape is a rounded oval, with but slight indication of the pointed end, and the measurements average $1\cdot2 \times 1\cdot0$.

708. *Rhinoptilus seebohmi*. *Seebohm's Courser.*

Cursorius cinctus (nec *Heugl.*), *Gurney*, in *Andersson's B. Damara*, p. 262 (1872); *Sharpe*, ed. *Layard's B. S. Afr.* p. 656 (1884); *Seebohm*, *Ibis*, 1886, p. 118 [in part]; *id. Geogr. Distr. Charadr.* p. 245, pl. 12 (1888) [in part].
Rhinoptilus seebohmi, *Sharpe*, *Bull. B. O. C.* iii, no. 13, p. 13 (1893); *id. Cat. B. M.* xxiv, p. 47, pl. 8, fig. 1 (1896); *Shelley*, *B. Afr.* i, p. 195 (1896); *Reichenow*, *Vög. Afr.* i, p. 161 (1900).

Description. Type, Female.—Above feathers of the head, back and wings brown, broadly edged with sandy-rufous giving a mottled

appearance; primaries dark brown, the inner ones edged and tipped with rufous; upper tail-coverts white; tail-feathers brown with dark subterminal bands and white tips, outer pair almost pure white; eyebrow, sides of the neck, chin and throat white; ear-coverts sandy; a narrow dark rufous-brown band extending from the ear-coverts across the lower neck; a broad sandy band edged above and below, and spotted with dark brown across the upper breast, and a third narrow chestnut band across the lower breast; rest of the lower surface and interspaces between the bands white.

Length about 10·85; wing 6·60; tail 3·30; culmen ·65; tarsus 2·60.



FIG. 105.—Head of *Rhinoptilus chalcopterus*. $\times \frac{1}{2}$.

A young bird has the mantle ashy-grey; the head streaked with black; the scapulars and coverts ashy-grey. A nestling is covered with dirty white down somewhat darker on the head.

Distribution.—The type of this species and another example now in the British Museum were obtained at Ondonga in Ovampoland, on January 25 and 27, 1867, while there are examples from the Matopos near Bulawayo in the Rhodesian Museum. It was also collected by Anchietta at Humbe on the Cunene River.

By Reichenow it is considered hardly distinct from *R. cinctus* of East and North-east Africa.

709. *Rhinoptilus chalcopterus*. *Bronze-wing Courser.*

Cursorius chalcopterus, Temm. *Pl. Col.* v, pl. 298 (1824); Gray, *Genera Bds.* iii, p. 587, pl. 143 (1844); Gurney, *Ibis*, 1861, p. 134 [Natal]; Layard, *B. S. Afr.* p. 290 (1867); Ayres, *Ibis*, 1871, p. 263, 1884, p. 232; Gurney, in Andersson's *B. Damaraland*, p. 263 (1872); Butler, *Feilden and Reid, Zool.* 1882, p. 341; Sharpe, ed. Layard's

B. S. Afr. p. 656 (1884); *Seebohm, Ibis*, 1886, p. 118; *id. Geogr. Distr. Charadr.* p. 246 (1888); *Fleck, Journ. Ornith.* 1894, p. 381; *Sharpe, Ibis*, 1897, p. 517 [Ulundi]; *Bryden, Nat. and Sport*, p. 80 (1897).

Rhinoptilus chalcopterus, *Sharpe, Cat. B. M.* xxiv, p. 48, pl. iv. fig. 1 (1896); *Shelley, B. Afr.* i, p. 195 (1896); *Woodward Bros. Natal B. p.* 181 (1899); *Marshall, Ibis*, 1900, p. 264; *Alexander, ibid.* p. 455; *Reichenow, Vög. Afr.* i, p. 157 (1900); *Whitehead, Ibis*, 1903, p. 236. *Rhinoptilus albofasciatus*, *Sharpe, Cat. B. M.* xxiv, p. 49, pl. iv, fig. 2 (1896).

Description.—*Adult Male*.—General colour above, including the crown of the head sepia-brown, the latter slightly mottled with chestnut along the median line; edge of the wing white; bastard wing, primary coverts and wing-quills black; third to tenth primaries with metallic-violet tips and a subterminal bar of metallic-green; the secondaries with a good deal of white on the inner web upper tail-coverts white; tail-feathers dark brown with conspicuous white tips; forehead, broad eyebrow, streak behind the eye, sides of the neck and lower throat white; a chestnut band separates the second and third of these, and the ear-coverts between the third and fourth are sandy-buff with a good deal of black; chin and upper throat and upper breast brown like the back, the latter bounded below by a black band; rest of the lower surface and axillaries white.

Iris dark brown; eyelid red; bill black; base of lower mandible and gape red; legs purplish-red; feet dusky.

Length about 10; wing 6·80; tail 3·2; culmen ·8; tarsus 2·95.

Dr. Sharpe has described as a distinct species under the name of *C. albofasciatus*, certain bronze-winged Courser distinguished by a white wing bar formed by the margins of the greater wing-coverts, by the dull bronzy-green ends of the quills, and by the absence of the white tip to the tail.

Both Alexander and Reichenow doubt the validity of this species, which has practically the same range as *R. chalcopterus*, and are inclined to think that the more dully plumaged birds are females or males in non-breeding plumage. I am induced to take this view also from an examination of the examples in the South African Museum.

Distribution.—The Bronze-winged Courser is only a summer visitor to South Africa, appearing about the commencement of the rainy season in November and December, and retiring north again to beyond the Zambesi in the cold weather. It is nowhere a very

common bird, and has only once or twice been obtained within the Colony. In German South-west Africa it appears to be a more regular visitor. Beyond our limits it ranges northwards to Loango on the west, and through Nyasaland and East Africa to Kordofan on the east. It has also been obtained in Senegambia.

The following are South African localities : Cape Colony—Kei Road near King William's Town (Trevelyan), Orange River near Aliwal North (Whitehead), Kudunque and Morokweng near Mafeking, April (Bryden); Natal—near Durban (H. Millar), Colenso, November (Reid), Ulundi in Zululand (Woodward); Orange River Colony—Rhenoster River, January (Ayres); Transvaal—Sand River in Lydenburg, April (Francis, in S. A. Mus.), Potchefstroom, January (Ayres), Rustenburg, November (Lucas); Rhodesia—near Salisbury, rare (Marshall), Feira on the Zambesi, December (Stoehr); German South-west Africa—Ondonga, January, and Otjimbinque, January (Bt. Mus.), March (S. A. Mus.), Reheboth, February (Fleck); Portuguese East Africa—Tete (Kirk), Senna, July, August (Alexander).

Habits.—Andersson states that this bird arrives at the commencement of the rainy season, in small flocks, which first of all secrete themselves in the bush to shelter themselves while moulting, but afterwards spread over the open country. They are not wild, but stick to cover, and if flushed quickly settle again and try to escape by running. Their food consists of insects, and specially of beetles. Their flesh is dark-coloured and excellent eating.

Mr. A. D. Millar writes as follows regarding the nesting of this bird : "When shooting in the Mozambique province (near Beira) two or three pairs were observed, and on September 28, 1903, my brother found two nests containing respectively three and two eggs—the bird being shot off the nest for identification. The nest was simply a depression in the ground. The eggs were very handsome, the ground colour being bright buff with large black and grey irregular markings throughout, but more clearly defined with larger spots at the thick end. The measurements were $1\cdot4 \times 1\cdot0$."

Sub-family II. GLAREOLINÆ.

Hind toe present; tarsus short, about one-fifth of the length of the wing.

Genus I. GLAREOLA.

*Type.***Glareola**, Brisson, *Orn.* i. p. 141 (1760) *G. pratincola*.

Bill short, stout and rather high at the base, culmen much arched, shorter than the middle toe without claw; nostrils linear ovals, placed at the base of the bill in a slight depression; wings very long and pointed, extending, when closed, beyond the feet and tail, the first primary distinctly the longest; tail strongly forked, the outer tail feathers, which are somewhat attenuated at the tip, at least half as long again as the central ones; tarsus short, hardly longer than the middle toe and claw, covered before and behind with

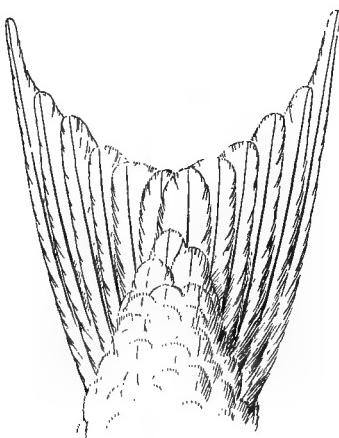


FIG. 106.—Tail of *Glareola melanoptera*, from below. $\times \frac{1}{2}$.

transverse scutes; hind toe present; a basal web connecting the outer and middle toes; claws rather long, that of the middle toe pectinated on its inner margin.

The Pratincoles range over Africa including Madagascar, Southern Europe and Central and Southern Asia, as far as China and Australia. Two species, both migratory visitors to South Africa, are found within our limits.

Key of the Species.

- | | |
|--|---------------------------------|
| A. Axillaries chestnut..... | <i>G. pratincola</i> , p. 333. |
| B. Axillaries black, like the under tail-coverts | <i>G. melanoptera</i> , p. 333. |

710. *Glareola pratincola.* *Pratincole.*

Hirundo pratincola, *Linn. Syst. Nat.* 12th ed. i, p. 345 (1766).

Tringa fusca, *Linn. Syst. Nat.* 12th ed. i, p. 252 (1766).

Glareola torquata, *Meyer, Taschenb.* ii, p. 404 (1816); *Gurney, Ibis*, 1863, p. 329 [Natal].

Glareola pratincola, *Gurney, in Andersson's B. Damaral.* p. 265 (1872);

Dresser, Bds. Eur. vii, p. 411, pl. 153, fig. 1 (1874); *Sharpe, ed. Layard's B. S. Afr.* p. 652 (1884); *Seebold, Geogr. Distr. Charadr.* p. 256 (1888); *Sharpe, Cat. B. M.* xxiv, p. 53 (1896); *Shelley, B. Afr.* i, p. 195 (1896); *Alexander, Ibis*, 1900, p. 457.

Glareola fusca, *Reichenow, Vög. Afr.* i, p. 144 (1900).

Description. *Adult.*—General colour above brown, with a slight olive shade; primaries, their coverts and inner secondaries black, the shaft of the first primary white, the secondaries slightly tipped with white; upper tail-coverts white; tail very strongly forked, feathers dusky brown, white on their basal halves; chin and throat sandy-buff, margined by a black line, starting from below the eye on either side; breast brown, like the back, but paler; abdomen and under tail-coverts white; axillaries and most of the under wing-coverts rich chestnut.

Iris blue; eyelids coral red; bill black, red at the base; legs dark brown.

Length 10·75; wing 7·10; tail, central feather 2·0, outer tail-feather 3·75; culmen 0·55; tarsus 1·25.

The female resembles the male; a young bird has white edgings to the feathers of the back and wings, and the cheeks and throat are creamy-white, with narrow black shaft lines.

Distribution.—The Pratincole breeds round the basin of the Mediterranean in Southern Europe and in Western Asia, and spends the winter in tropical Africa, especially in Abyssinia and Nyasaland. It can hardly be regarded as more than an accidental visitor to South Africa, as the following list of recorded localities shows: Cape Colony—near George, September (Gird in S. A. Mus.); Natal, once (Ayres); Damaraland, once (Andersson); Chisombe, October, and Senna, July, on the Zambesi (Alexander).

711. *Glareola melanoptera.* *Nordmann's Pratincole.*

Glareola melanoptera, *Nordmann, Bull. Soc. Imp. Nat. Moscou* i, p. 314, pl. ii (1842); *Finsch & Hartl. Vög. Ost-Afr.* p. 633 (1870); *Gurney, in Andersson's B. Damaral.* p. 264 (1872); *Barratt, Ibis*, 1876, p. 212; *Oates, Matabeleland*, p. 325 (1881); *Butler, Feilden and Reid, Zool.* 1882, p. 341; *Sharpe, ed. Layard's B. S. Afr.* pp.

650, 855 (1884); *Seeböhm*, *Ibis*, 1887, p. 342; *id. Geogr. Distr. Charadr.* p. 261 (1888); *Sharpe*, *Cat. B. M.* xxiv, p. 57 (1896); *Shelley*, *B. Afr.* i, p. 195 (1896); *Woodward Bros.*, *Natal B.* p. 181 (1899); *Reichenow*, *Vög. Afr.* i, p. 145 (1900); *Whitehead*, *Ibis*, 1903, p. 236; *Sharpe*, *Ibis*, 1904, p. 12 [Deelfontein].

Glareola nordmanni, *Fischer*, *Bull. Soc. Imp. Nat. Moscou* ii, p. 314 (1842); *Gurney*, *Ibis*, 1864, p. 354 [Natal]; *Layard*, *B. S. Afr.* p. 291 (1867); *Gurney*, *Ibis*, 1868, p. 254, pl. viii; *Layard*, *Ibis*, 1869, p. 75; *Ayres*, *Ibis*, 1871, p. 263, 1877, p. 347, 1884, p. 232; *Buckley*, *Ibis*, 1874, p. 388; *Oakley*, *Trans. S. A. Phil. Soc.* ii, p. 49 (1881); *Holub & Pelz. Orn. Süd-Afr.* p. 241 (1882); *Bryden*, *Nat. and Sport*, p. 104 (1897).

"Klein Springhaan Vogel" of Dutch, "Little Locust Bird," of the English (a name applied also to the Wattled Starling, *Dilophus carunculatus*). "Uwhamba" of the Zulus (Woodward).

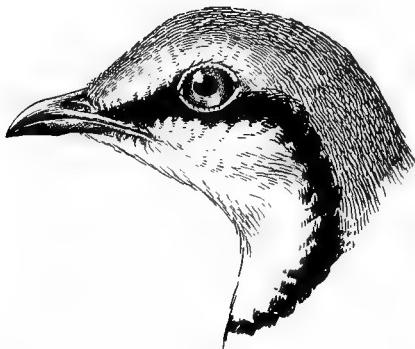


FIG. 107.—Head of *Glareola melanoptera*. $\times \frac{1}{2}$.

Description. *Adult.*—Very similar to *G. pratincola*, but at once distinguished by the colour of the axillaries and under wing-coverts, which are black and not chestnut.

Iris dark brown; bill black, the base and edges of the mandible red; feet dusky.

Length 10·75; wing 7·5; tail, outer feather 4·35, middle feather 2·5; culmen 0·53; tarsus 1·45.

A young bird has pale edgings to most of the feathers; the throat is whitish with dark shaft lines and is not circumscribed by the dark line present in the adult; the tail is not so forked, the difference in length between the inner and outer feathers being about an inch only; axillaries black margined with chestnut.

Distribution.—Nordmann's Pratincole breeds in South-west

Russia and West Siberia during the northern summer, passes through Persia, Asia Minor, Turkey, Egypt and Nubia, and winters in West and South Africa. Curiously enough it has not hitherto been met with in East Africa.

It arrives in South Africa in October and leaves again in March, and is found during those months over the greater part of our area, especially when there are locusts about. It has not yet been noticed in Rhodesia.

The following are localities: Cape Colony—Eerste River, Cape division, October (S. A. Mus.), Grahamstown and Queenstown (Bt. Mus.), Port Elizabeth and East London (Rickard), King William's Town (Trevelyan), Peddie, February (S. A. Mus.), Ibeka in Transkei, January (Oakley), Deelfontein, February (Seimund), Orange River near Upington (Bradshaw), near Aliwal North, December, January (Whitehead); Natal—Newcastle, Ladysmith and Colenso, October, November (Butler); Orange River Colony—Vrededorp Road, November (B. Hamilton); Transvaal—Potchefstroom, October, December, February (Ayres), Pretoria District, December (Oates), March (Barratt); German South-west Africa—Otjimbinque (Andersson).

Habits.—This bird, together with the Wattled Starling and the White Stork, are all known as Locust Birds in South Africa, and are much appreciated for the great assistance they afford to the farmer in helping to destroy the devastating swarms of locusts which ravage the country from time to time. They are generally, though by no means invariably, found in large flocks following the swarms; they have a bold, swallow-like flight and catch their prey in the air, and they also run on the ground like plovers and pick up "voetgangers," or young locusts still without wings. When attacking a swarm they separate out a certain portion, and flying round in an ever-widening ring, destroy all the enclosed insects, snapping off their wings and devouring them whole. It is not probable that this bird breeds in South Africa, Layard's notice of it being undoubtedly due to a confusion with the Wattled Starling, which is also known as the "Locust bird." Several observers have come across Nordmann's Pratincole where there were no locusts about, and state that it will devour beetles or any other insects in the absence of its more notorious prey.

Genus II. GALACTOCHRYSEA.

Type.

- Galachrysea**, *Bp. Compt. Rend.* xliii, p. 419 (1856) G. lactea.
Galactochrysea, *Heine and Reichw. Nomencl. Mus. Hein.* p. 338 (1890) G. lactea.

The members of this genus resemble *Glareola*, except that the tail is not forked but very nearly square, the outer feather only slightly exceeding the middle one in length.

This genus ranges all over Africa and the Indian Peninsula; out of six recognised species only one has been obtained just within our limits on the Zambesi.

712. **Galactochrysea emini.** *Emin's Pratincole.*

- Glareola emini*, *Shelley, P. Z. S.* 1888, p. 49; *Seeböhm, Geogr. Distr. Charadr.* p. 269 (1888); *Shelley, B. Afr.* i, p. 195 (1896); *Alexander, Ibis*, 1900, p. 458; *Reichenow, Vög. Afr.* i, p. 147 (1900).
Galactochrysea emini, *Sharpe, Cat. B. M.* xxiv, p. 64, pl. 5, fig. 2 (1896).

Description. *Adult.*—General colour above dark ashy with a slight olive gloss; a white collar round the hind neck; quills blackish-brown: secondaries without white at the base; upper tail-coverts white; tail feathers blackish-white at the base; throat and breast dark ashy-grey, becoming quite white on the vent and under tail-coverts; axillaries greyish.

Iris brown; bill black; base and gape coral-red; legs and feet coral-red.

Length 8·0; wing 6·0.; tail 2·5; tarsus 0·7; culmen 0·55.

Distribution.—This species was described by Shelley from an example procured at Foda on the Nile by Emin Pasha in October, 1885; it has since been found in other parts of Central and West Africa. It has been brought within our limits by Captain Alexander, who procured four examples on the Zambesi at Mesanangue and Zumbo in August and November.

Habits.—Captain Alexander gives the following account: “This species is distributed in small colonies along the river above Tete; small islands of sand interspersed with rock are favourite resorts; on the smooth portions of these rocks these graceful little birds were to be observed throughout the day in squatting positions basking in the heat of the sun. They evince little fear, and if driven from

their retreat they fly away a short distance, to return again and alight on the rocks like so many swallows, uttering all the time a series of faint notes which might be described by the syllables "kip kip" rapidly repeated. During a shower of rain these birds would congregate into small flocks and fly to and fro above the water, making a great noise, and all the time busy catching insects."

Family IV. PARRIDÆ.

Skull schizorhinal; nostrils pervious; basipterygoid processes present; sixteen cervical vertebræ; a spur on the carpal joint of the wing; foot with four toes, all greatly lengthened with long, straight, pointed claws. Eggs very glossy and beautifully marked.

Other characters are: cæca very small and nipple-like; all five Garrodian thigh-muscles present; flexor tendons of the toes peculiar, resembling the condition found in three-toed birds, the two tendons uniting above and being distributed to the three anterior toes, while the hind toe has no flexor at all.

Genus I. ACTOPHILUS.

Type.

Phyllopezus (*nec Peters, 1877*) *Sharpe Cat. B. M.*

xxiv, p. 76 (1896) *A. africanus.*

Actophilus, *Oberh. Proc. Acad. Philad.* 1899, p. 202 *A. africanus.*

Bill long and pointed; upper mandible continued posteriorly into a large frontal shield which covers the whole of the fore part of the crown to behind the level of the eyes; nostrils oval, placed in a slight depression about half-way down the bill; wings moderate, first and second primaries subequal; a blunt spur on the carpal bone at the joint of the wing; tail short and almost concealed by the coverts; legs long; tarsus with transverse shields before and behind; toes long, exceeding the tarsus in length; the claws also elongated, that of the hind toe specially so, forming more than half the length of the whole toe; claws all straight; no webs between the toes.

Two species are referred to this genus, one confined to Madagascar, the other spread all over Africa.

713. *Actophilus africanus*. *African Jacana*.

Parra africana, *Gmel. Syst. Nat.* i, p. 709 (1788); *Swains. Zool. Illustr.*, 2nd ser., pl. 6 (1829); *Gurney, Ibis*, 1859, p. 249, 1862, p. 38 [Natal]; *Kirk, Ibis*, 1864, p. 334; *Layard, B. S. Afr.* p. 335 (1867); *Gurney, in Andersson's B. Damaral.* p. 328 (1872); *Shelley, Ibis*, 1875, p. 86; *Forbes, P. Z. S.* 1881, p. 639; *Holub & Pelzeln, Orn. Süd-Afr.* p. 296 (1882); *Shelley, Ibis*, 1882, p. 367 [Koomoorooi

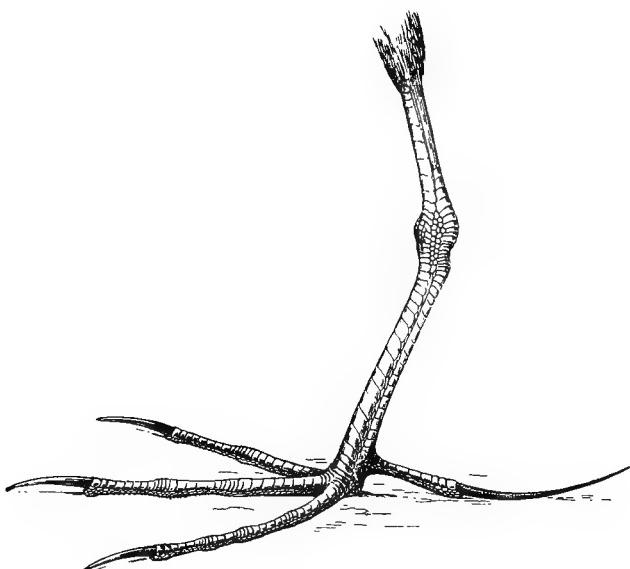


FIG. 108.—Left foot of *Actophilus africanus*. $\times \frac{1}{2}$.

Pan] ; *Sharpe, ed. Layard's B. S. Afr.* p. 648 (1884); *W. Ayres, Ibis*, 1887, p. 62; *Bryden, Gun and Camera*, p. 350 (1893); *Fleck, Journ. Ornith.* 1894, p. 384; *Rendall, Ibis*, 1896, p. 176; *Sharpe, Ibis*, 1897, p. 516 [Zululand].

Phyllopezus africanus, *Sharpe, Cat. B. M.* xxiv, p. 76 (1896); *Shelley, B. Afr.* i, p. 187 (1896); *W. L. Slater, Ibis*, 1899, p. 114 [Inham-bane] ; *Woodward Bros. Natal B.* p. 183 (1899); *Alexander, Ibis*, 1900, p. 451; *Oates, Cat. B. Eggs*, ii, pp. 72, 360 (1902).

Actophilus africanus, *Reichenow, Vög. Afr.* i, p. 267 (1900).

Description. Adult Male.—Forehead and crown of the head naked; a short but distinct white eyebrow from the base of the beak to above the eye, below which is a band of shiny black, commencing

below the gape, running through the eye and over the ear-coverts to join its fellow from the other side and thence down the back of the neck to the mantle; rest of the face and neck white; general colour above rich chestnut, becoming maroon on the rump and tail; wing quills and primary coverts black, the latter and the inner secondaries with more or less rufous at the base and on the inner web; below including the axillaries and under wing-coverts maroon-rufous; the lower neck golden-yellow, separated from the rufous by a row of black feathers forming an incipient transverse band.

Iris blackish-brown; crown of the head and basal half of the bill leaden-blue, greyish towards the tip; legs and feet slate-coloured, slightly darker on the feet and ankles; a blunt spur on the first metacarpal.



FIG. 109.—Head of *Actophilus africanus*. $\times \frac{11}{12}$.

Length about 10·0; wing 5·5; tail 1·7; culmen 1·25, to posterior edge of frontal shield 2·0; tarsus 2·5; middle toe and claw 3·3.

The sexes are alike, the female being slightly larger, frontal shield 2·2, tarsus 2·75, wing 6·0.

A young bird has the crown and hind neck brown; the back an oily-brown; the rump and tail dusky-brown and the breast and lower parts white, with traces of the coming maroon. They probably only attain adult plumage at the second year.

Distribution.—The Jacana is found throughout the greater part of Africa from Senegal and Abyssinia southwards to Cape Colony.

Within our area it is widely distributed where suitable conditions exist, and appears to be specially abundant on the coast of Natal and Zululand, along the Zambezi, and about the Okavango River. It is not at all common in Cape Colony.

The following are recorded localities: Cape Colony—Cape division,

Swellendam and Colesberg (S. A. Mus.), Zwartkops River near Port Elizabeth (Rickard), rare at King (Trevelyan); Natal—Clairmont, near Durban (Stark and Millar), St. Lucia Lake in Zululand (Woodward); Transvaal—Sabi River Flats in Lydenburg (Rendall), Mashupan River in Lydenburg (W. Ayres); Transvaal—near Johannesburg (Haagner); Bechuanaland—Nocana (Fleck), Lake Ngami and Botletli River (Andersson and Bryden), Koomoorooi Pan (Ayres); Rhodesia—Pandamatenga (Holub), Feira on the Zambesi (Stoehr); German South-west Africa—Okavango River (Andersson); Portuguese East Africa—Zambesi (Kirk and Alexander), Urema River near Beira (S. A. Mus.), Inhambane (Francis).

Habits.—This bird, to which Sir Harry Johnson has given the appropriate name of Lily-trotter, is remarkable for the extraordinary length of its toes and claws, which enable it to run rapidly over the surface of floating leaves and decaying vegetable matter; it is found in pairs or sometimes in small parties inhabiting stagnant pools or still backwaters at the sides of rivers and lakes, especially where water weeds abound; it is a vivacious bird and by no means shy, often allowing a near approach; its flight is weak and seldom far prolonged, it usually flutters over the surface of the pool with its long legs hanging down, which gives it a clumsy appearance; it feeds on insects and the seeds of water-plants, which it obtains by turning over the floating vegetation. In the breeding-season the male becomes very demonstrative, chasing the female from one side of the pool to the other and uttering a series of hoarse guttural notes, and battling with and driving off any intruding rival.

Mr. Millar informs me that numbers of these birds are to be seen throughout Natal frequenting the lagoons and pans. At Clairmont, near Durban, in a vlei covered with water-lilies, quantities of them breed, their nesting-season being from December to February. The nest is composed of floating weeds gathered together, being just sufficient to support the bird; sometimes the eggs even rest in the water. The clutch consists of four beautiful shiny eggs with a very hard shell. The young recently hatched often lie flat on the floating leaves of water-lilies to escape detection, and may even be occasionally picked up in the hand without moving.

The South African Museum is indebted to Mr. Millar for two eggs of this bird obtained at Clairmont on December 4; they are very glossy, long ovals, sharply pointed at one end, and are very beautifully marked with scrolls of a very dark brown and a somewhat lighter shade intermingled on a pale ochraceous-brown ground; they measure respectively $1\cdot34 \times 0\cdot84$ and $1\cdot29 \times 0\cdot88$.

Genus II. MICROPARRA.

*Type.***Microparra**, *Cab. Journ. Ornith.* 1877, p. 349 *M. capensis*.

Resembling *Actophilus* in other respects, but with no trace of a frontal shield ; a small blunt carpal spur present.

Only the one species here described is assigned to this genus.

714. ***Microparra capensis*. Smaller Jacana.**

Parra capensis, *Smith, Ill. Zool. S. Afr. Aves*, pl. 32, (1839); *Gurney, Ibis*, 1860, p. 221, 1864, p. 360 [Natal]; *Layard, B. S. Afr.* p. 336 (1867); *Gurney, in Andersson's B. Damaral.* p. 330 (1872); *Holub & Pelz. Orn. Süd-Afr.* p. 297 (1882); *Sharpe, ed. Layard's B. S. Afr.* p. 649 (1884).

Microparra capensis, *Fleck, Journ. Ornith.* 1894, p. 384; *Sharpe, Cat. B. M. xxiv*, p. 89 (1896); *Shelley, B. Afr.* i, p. 187 (1896); *Woodward Bros. Natal B.* p. 183 (1899); *Reichenow, Vög. Afr.* i, p. 270 (1900).

Description. Male.—Crown and nape chestnut, with a slight metallic wash ; below the nape a metallic-purplish black patch separating two straw-coloured patches on the sides of the breast and neck ; back and wings sepia-brown slightly mottled with metallic-purplish and chestnut, the coverts with paler, almost white tips, quills black, the secondaries tipped with white ; upper tail-coverts and tail chestnut, the latter with dark brown tips to some of the feathers ; forehead and lores golden-yellow, a distinct white eye-brow ; beneath white throughout except the axillaries and sides of the body, which are chestnut ; under wing-coverts black.

Iris hazel ; bill brown ; legs and feet greenish-brown.

Length about 6 ; wing 3·5 ; tail 1·1 ; culmen 0·6 ; tarsus 1·5 ; middle toe and claw 2·2 ; hind toe about 2·0, of which the claw, which is excessively elongated, forms 1·5.

The sexes are alike.

Distribution.—The Smaller Jacana is not so common or so widely distributed as the larger species. It was first obtained by Smith from the neighbourhood of Algoa Bay, and subsequently by Trevelyan at King William's Town ; these are the only records of its occurrence in the Colony ; Ayres obtained it at Sea Cow Lake, and Millar at Clairmont, both near Durban, Bradshaw and Holub near the Upper Zambesi at Pandamatenga, and Andersson and Fleck in the Ngami country and on the Okavango. Beyond our limits it

extends through Nyasaland and East Africa as far north as Lake Naivascha in British East Africa.

Habits.—Ayres states that the Smaller Jacana does not differ from its larger relation in habits. He found both species inhabiting the same localities near Durban, and the only peculiarity he noticed was that the present species bobbed its head up and down like a small flower.

Mr. Millar tells me that this Jacana resembles the larger species in its nesting habits in every way, except that it breeds later in the year; it builds a floating nest and lays three to four eggs which are similarly marked, but of course a good deal smaller. Mr. Millar found several clutches in the Clairmont vlei near Durban, in March, 1904.

Family V. CHARADRIIDÆ.

Skull schizorhinal; basipterygoid processes present; nostrils pervious; cervical vertebræ fifteen in number; hallux generally present but small; webs between the toes varying in development; eggs large, conical, and four in number, so that they lie with the pointed ends towards one another.

In subdividing this large family I have followed Mr. Blanford (*Fauna of India, Birds*, vol. iv. p. 221) grouping the numerous forms into four subfamilies.

Subfamily I. CHARADRIINÆ.

Bill moderate, not longer than the head; nasal groove not extending more than half the length of the upper mandible; tarsus reticulated behind and often in front as well.

Genus I. ARENARIA.

Type.

Arenaria, Briss. *Orn.* v, p. 132 (1760) A. interpres.

Bill moderate, rather conical and tapering; culmen about as long as the tarsus, shorter than the head; no dertrum or swelling towards the tips of the mandibles; nostrils linear ovals in a slight depression, not extending beyond the basal half of the mandibles;

wings long and pointed, first primary the longest, reaching to the tip of the tail when the wings are closed; tail of twelve feathers, very slightly rounded; tarsus about the length of the middle toe and claw with a few transverse scutes in front, on the sides and posteriorly covered with reticulate scales; hind toe present; no web between the anterior toes.

Two species of this genus are generally recognised, one confined to Western and North-western America, the other practically cosmopolitan and here described.

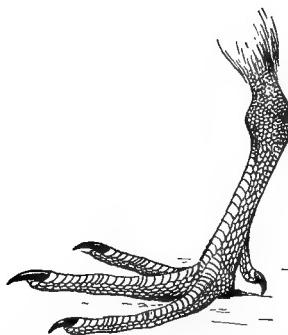


FIG. 110.—Left foot of *Arenaria interpres*. $\times \frac{1}{2}$.

715. *Arenaria interpres*. Turnstone.

Tringa interpres, Linn. *Syst. Nat.* 12th ed. i, p. 248 (1766).

Strepsilas interpres, Gurney, *Ibis*, 1864, p. 355 [Natal]; Dresser, *B. Eur.* vii, p. 555, pl. 532 (1875); Sharpe, ed. *Layard's B. S. Afr.* p. 671 (1884); Seeböhm, *Geogr. Distr. Charadri.* p. 410, with fig. (1888). *Cinclus interpres*, Layard, *B. S. Afr.* p. 301 (1867); Gurney, in Andersson's *B. Damara*, p. 276 (1872).

Arenaria interpres, Sharpe, *Cat. B. M.* xxiv, p. 92 (1896); Shelley, *B. Afr.* i, p. 190 (1896); Reichenow, *Vög. Afr.* i, p. 142 (1900).

Description. Male in non-breeding plumage.—Above dark brown, mottled and streaked with darker brown, most of the wing-coverts tipped with white, forming a white wing bar, primaries and primary-coverts black, the former with white shafts; secondaries chiefly white; lower back and rump and the longer upper tail-coverts pure white; the shorter upper tail-coverts black, forming a band across the lower back; central tail-feathers black with white bases, outer feathers with more white, the outer ones completely white; sides of

the face mottled black and white; below, including the axillaries and under wing-coverts white throughout, except for a black patch on either side of the chest extending across the lower neck to form a bar.

Iris dark brown; bill black; feet orange; claws black.

Length (in flesh) 9·0, wing 6·0, tail 2·5, culmen 0·84, tarsus 1·0.

In the breeding plumage the back, scapulars and coverts are mottled with many chestnut, or partially chestnut feathers, the crown of the head and hind neck are white, the former mottled, the latter streaked with black; the black on the breast is much more extensive and deeper in tone; the young bird closely resembles the adult in winter plumage.

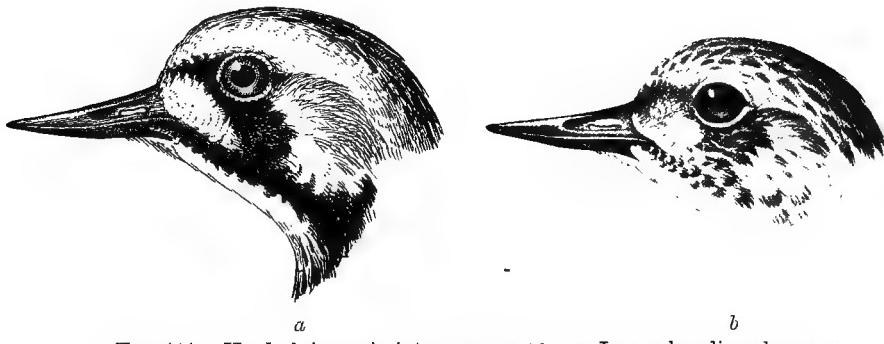


FIG. 111.—Head of *Arenaria interpres*. $\times \frac{1}{2}$. *a*, In non-breeding plumage; *b*, in breeding plumage.

Distribution.—The Turnstone is perhaps the most thoroughly cosmopolitan of all birds. It breeds on the shores of the Arctic Ocean in Europe, Asia and America, and also on the Islands off the coasts of Scandinavia and Denmark. During the northern winter it is found on the coasts of all the continents and islands south of the Tropic of Cancer. In South Africa the Turnstone occurs along the sea coast in summer, and has been once obtained in April in breeding-dress by Andersson. Layard believed that it bred on Robben Island, as he had seen what he believed to be young birds running about, but further evidence is required before this statement can be accepted.

Hitherto no undoubtedly eggs have been taken south of the Baltic.

The following are localities: German South-west Africa—Swakopmund, December, Walfisch Bay, April, in breeding dress

(Andersson) ; Cape Colony—Port Nolloth, December (S. A. Mus.), Jut Island in Saldanha Bay, May (Stark), Robben Island, False Bay, October, and Orange River near Upington, December (S. A. Mus.) ; Natal—seashore (Ayres).

Habits.—The Turnstone is almost exclusively a bird of the seashore, though occasionally, especially on migration, found inland ; it prefers rocky places to sandy beaches, and feeds on small crustacea and mollusca, which it obtains by turning over stones and seaweed ; it is wary and difficult to approach, and its note is a clear whistle.

As already stated it is not known definitely to breed in South Africa, but in northern regions its nest is placed on or near the seashore, and consists merely of a lining of a few dry leaves or bents in a shallow depression. Four eggs of a greenish-grey colour spotted and streaked with bluish-ash and brown and measuring $1\cdot 6 \times 1\cdot 1$ are laid, and both sexes share in incubation.

Genus II. LOBIVANELLUS.

Type.

Lobivanellus, Strickl., P. Z. S., 1841, p. 33 L. lobatus.

Bill moderate, about the same length as the middle toe and claw ; a well-marked swelling or dertrum at the tip of the mandibles ; nostrils linear in an elongated depression on the mandible, extending two-thirds the length of the bill ; a large leaf-like wattle between

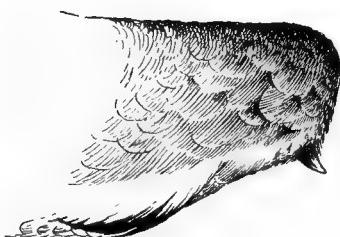


FIG. 112.—Bend of the right wing of *Lobivanellus lateralis*, to show the carpal spur.

the eye and the base of the bill ; wings long and pointed, the second and third primaries sub-equal and longest, a strong, sharp carpal spur ; tarsus more than twice the length of the middle toe and claw, and covered with transverse scutes in front and reticulations behind ;

hind toe present, though very small; outer and middle toes connected by a basal web.

This genus contains four species, two of which are found in Africa and two in Australasia; only one of these comes within the limits of our fauna.

716. *Lobivanellus lateralis*. Wattled Plover.

Vanellus lateralis, Smith, Ill. Zool. S. Afr. Aves pl. 23 (1839).

Lobivanellus senegalensis (*nec Linn.*), Kirk, Ibis, 1864, p. 331.

Chettusia lateralis, Layard, B. S. Afr. p. 292 (1867); Buckley, Ibis, 1874, p. 387.

Lobivanellus lateralis, Gurney, in Andersson's B. Damara! p. 267 (1872); Ayres, Ibis, 1873, p. 283; Shelley, Ibis, 1882, p. 363 [Mashonaland]; Holub & Pelzeln, Orn. Süd-Afr. p. 240 (1882); Seeböhm, Geogr. Distr. Charadr. p. 193, with fig. (1888); Sharpe, Cat. B. M. xxiv, p. 144 (1896); Shelley, B. Afr. i. p. 187 (1896); Sowerby, Ibis, 1898, p. 575; Marshall, Ibis, 1900, p. 264; Alexander, Ibis, 1900, p. 452; Reichenow, Vög. Afr. i. p. 194 (1900).

Lobivanellus senegalus (*nec Linn.*), Sharpe, ed. Layard's B. S. Afr. pp. 666, 855 (1884).

“Querri-querri” of Mashonas (Sowerby).

Description. Adult Male.—A double triangular wattle between the eye and the beak; forehead and fore part of the crown white; eyebrow and hind crown very dark brown, becoming lighter on the nape and neck, where the feathers are dark-centred; back brown, with an olive tinge, becoming paler on the wing-coverts, the tips of which are white, forming a very conspicuous wing bar; wing-quills, primary coverts and bastard wing black, the bases of the primaries white, which colour increases until only the distal third of the secondaries are black; upper tail-coverts and tail white, with a broad subterminal black bar to the latter; chin white, throat black; sides of the face and rest of the neck whitish streaked with dusky; breast olive-brown, like the back, below which is a transverse band of black, best developed on the flanks; under tail-coverts, under wing-coverts and axillaries white.

Iris steel-grey, surrounded by a ring of tawny-brown, and again by a ring of black; bill bright gamboge yellow, tips black; upper portion of wattle bright brick-red, under portion and eyelid gamboge yellow; tarsi and feet pale greenish-yellow; a pointed conical black spur on the angle of the wing; a small hind toe present.

Length about 13·5; wing 9·5; tail 4·0; tarsus 3·25; culmen 1·3;

hind toe about 0·35. The female is smaller; wing about 8·25; tarsus 3·25.

Distribution.—The Wattled Plover was first described by Sir A. Smith, who obtained a single example on the banks of the lower Tugela River in Natal. There is only one notice of its occurrence in Cape Colony, which is perhaps due to error, but it becomes more abundant north of the Vaal, and is common in Rhodesia, Northern Bechuanaland and Ovampoland, especially in the wet season. Beyond our limits it extends to Angola, Nyasaland and German East Africa, as far as Victoria Nyanza. The following are localities: Cape Colony—Port Elizabeth (Rickard); Natal—Tugela River

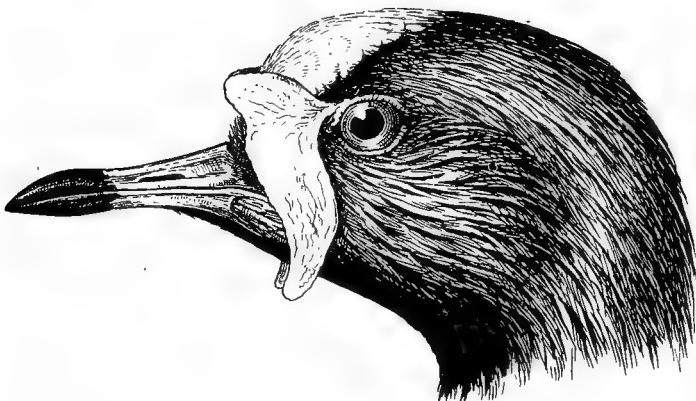


FIG. 113.—Head of *Lobivanellus lateralis*. $\times \frac{11}{12}$.

(Smith), Zululand (Millar); Transvaal—Potchefstroom, April, August, December (Ayres), Swaziland (Hutchinson); Bechuanaland—Lake Ngami, rainy season (Andersson); Rhodesia—Khami River, near Bulawayo (S. A. Mus.), Upper Zambezi (Holub), Fort Chiquaqua, rainy season (Sowerby); German South-west Africa—Okavango River and Ondongo, rainy season (Andersson); Portuguese East Africa—Zambesi (Kirk and Alexander).

Habits.—The Wattled Plover is, so far as our present knowledge goes, only a migrant during the rainy season, between October and March, to our region. It is generally found in small flocks, though sometimes seen singly or in pairs; it haunts flats near rivers and vleis, where it searches for beetles and other insects and small mollusca, on which it preys; it is a roving bird, circling round like

an English Peewit and uttering loud cries. Marshall states that it is often to be heard during the night time; he also observed that the males used the spurs on their wings when fighting with one another.

Mr. Millar gives me the following information in regard to the nesting of this Plover: "On September 29, when hunting near the Buedsi River in the Beira province of Mozambique I noticed one of these birds leave a shingle bed not far from a pool, and here I discovered a nest containing one egg only. The nest was simply a depression in the soil, which was very hard and had been picked up by the bird, so that it resembled a mass of small pebbles, in the centre of which lay the egg. The egg was slightly incubated and measured 1·8 x 1·6. It resembled the egg of the Crowned Plover (*Stephanibyx coronatus*) but was much larger. The markings assimilated the surroundings very closely, and although the egg was exposed it was by no means easy to detect."

Genus III. XIPHIDIOPTERUS.

Type.

Xiphidiopterus, Reichenb., *Nat. Syst. Vög.*, p. 18 (1852) X. albiceps.

Closely allied to *Lobivanellus*, but with no hind toe; carpal spur long and sharp and facial wattles very large. Only two species of this genus are known, one here described and another from the Malayan Islands of Java, Sumatra and Timor.

717. **Xiphidiopterus albiceps.** *White-headed Wattled Plover.*

Vanellus albiceps, Gould, *P. Z. S.* 1834, p. 45.

Hoplopterus albiceps, Layard, *B. S. Afr.* p. 293 (1867); Gurney, *Ibis*, 1868, p. 255.

Sarcophorus albiceps, Ayres, *Ibis*, 1874, p. 104.

Lobivanellus albiceps, Holub & Pelz., *Orn. Süd-Afr.* p. 240 (1882); Sharpe, ed. Layard's *B. S. Afr.* pp. 667, 855 (1884); Seeböhm, *Geogr. Distr. Charadr.* p. 195, pl. viii. (1888); Shelley, *B. Afr.* i, p. 187 (1896); Alexander, *Ibis*, 1900, p. 451.

Xiphidiopterus albiceps, Sharpe, *Cat. B. M.* xxiv, p. 147 (1896); Reichenow, *Vög. Afr.* i, p. 192 (1900).

Description. Adult Male.—Forehead and band down the middle of the crown white; rest of the head, sides of the face and neck slaty-grey; centre of the back and scapulars light brown; some of

the outer scapulars (forming a patch), bastard wing, primary coverts and wing-quills, except the first three, white ; wing-coverts and first three primaries black, the latter white towards their bases ; rump and upper tail-coverts white ; tail-feathers white for their basal, black for their distal halves ; centre of the throat and under surface of the body pure white throughout.

Iris pale yellow ; bill black, the basal half clear citron-yellow ; legs and feet grass-green ; claws black ; lappet about an inch in length and rounded at the tip, dark citron-yellow, with a black spot on the inner side ; a long, sharp-pointed black carpal spur about 0·7 long ; no hind toe.

Length about 11·5; wing 8·25; tail 3·8; culmen 1·3; tarsus 2·8.

Distribution.—This is a tropical African Plover, which has but seldom occurred south of the Zambesi. It is stated to have been obtained by Verreaux on the Buffalo River in Namaqualand, but possibly this is an error. It is found all over West and East Africa, from Liberia and Kordofan southwards.

The following are localities : Transvaal—Potchefstroom (Ayres) ; Rhodesia—near Victoria Falls (Holub) ; Portuguese East Africa—Senna, July, and Tete, August (Alexander), Urema River in the Beira district, October (S. A. Mus.)

Habits.—Captain Alexander gives the following account : “ This bird is found in pairs here and there along the river, haunting the margin of the water where the banks are gently sloping and of a sandy nature. At one’s approach they jump up in a spasmodic manner to fly out across the water. When startled they are noisy birds, uttering their plaintive but not unmusical ‘ whit whit,’ repeated rapidly in succession. They are often found at some distance from water, haunting the sandy stretches of a dried-up river bed or moist spots where the grass is short and succulent. In such places a small party may regularly be observed towards evening fully occupied in ‘ drawing’ worms. The flight of this species is strong and buoyant, with a steady beat of wings. At dusk these Plovers often become noisy, giving vent to plaintive ‘ whits.’ ”

Mr. Ayres’ only specimen was shot in a garden in Potchefstroom and was subsequently unfortunately lost.

Mr. Millar found this bird abundant along the Pungwe and Dingi-dingi Rivers in the Beira district in October. He readily recognised them when in flight by the patch on the wing. A pair were evidently nesting or had young along the river in the shingle, but he was unable to find the nest. Subsequently he shot and

skinned a female, which contained an egg in the oviduct; this was of the usual Plover-shape with light blue ground, minutely spotted throughout, but of course this may not have been the colour of the egg when laid. It measured 1·6 × 0·8.

Genus IV. HEMIPARRA.

Type.

Hemiparra , De Filippi, <i>Atti Soc. Ital.</i> viii, p. 270 (1865).....	H. crassirostris.
Defilippia , Salvador., <i>Atti Soc. Ital.</i> viii, p. 273 (1865).....	H. crassirostris.

Bill moderate, culmen less than half the length of the tarsus; a marked swelling or dertrum towards the tip of both mandibles; nostrils linear in a groove extending nearly two thirds the length of the bill; no wattles; wing with the first primary the longest; a sharp-pointed small carpal spine; legs very long and slender, tarsus with transverse scutes in front, reticulated, or partially so, at the sides and behind; hind toe present; toes long and slender, with a very slight basal web between the middle and outer toes.

Only two species are included in this genus, which is confined to East Africa from the Upper Nile valley to Natal.

718. **Hemiparra leucoptera.** *Long-toed Lapwing.*

Hoplopterus crassirostris (*nec De Fil.*) Layard, *Ibis*, 1871, p. 105 [St. Lucia Bay]; Sharpe, ed. Layard's *B. S. Afr.* p. 669 (1884).

Lobivanellus albiceps (*nec Gould*) Holub & Pelz., *Orn. Süd-Afr.* p. 240 (1882); Sharpe, ed. Layard's *B. S. Afr.* pp. 667, 855 (1884).

Vanellus crassirostris, Seebold, *Geogr. Distr. Charadr.* p. 214, with fig. (1888).

Vanellus leucopterus, Reichenow, *Journ. Ornith.* 1889, p. 265; Shelley, *B. Afr.* i, p. 189 (1896).

Defilippia leucoptera, Sharpe, *Cat. B. M.* xxiv, p. 127, pl. vii, fig. 1 (1896).

Hemiparra leucoptera, Reichenow, *Vög. Afr.* i, p. 185 (1900).

Description. *Adult.*—Forehead and eyebrow, sides of the face and neck, chin and throat white; back of the head, nape, upper part of the mantle, sides and centre of the breast, black; lower mantle, scapulars, and some of the inner secondaries, slaty-grey, darkest on the rump; rest of the wings, except the three outer

primaries, which are black, pure white; upper tail-coverts white; tail-feathers black on their terminal, white on their basal halves; body beneath, except for the conspicuous black breast, white throughout.

Iris scarlet, eyelids carmine; bill black, base violet; feet rosy-violet, the large tarsal scales black.

Length 12·0; wing 7·5; tail 3·25; culmen 1·3; tarsus 3·15; middle toe and claw 2·0.

Distribution.—This Plover is found in South Central Africa from about the southern end of Victoria Nyanza to the Zambesi and Zululand. It has only twice been recorded from within our limits—by Holub from the Upper Zambesi and its tributaries near the Victoria Falls, and by Layard, who examined examples obtained by Mr. Fellowes near St. Lucia Lake, in Zululand.

Habits.—This Lapwing has very much longer toes than most of its allies, and is found about the banks of rivers, where it obtains its food among the floating vegetation. It has some resemblance to the Rails and Jacanas, but probably this is only adaptive. Reichenow describes the eggs as pale grey-green, with larger and smaller dark brown markings, both round and linear, and measuring about 1·70 × 1·30.

Genus V. HOPLOPTERUS.

Type.

- Hoplopterus**, *Bp. Saggio Distr. Met. Anim. Vert.*,
p. 56 (1831) *H. spinosus*.

Bill moderate, with a distinct apical swelling or dertrum; nostrils linear, placed in a groove extending two-thirds the length of the bill; no facial wattles; a long, sharp, black carpal spur; wings long and pointed; first and second primaries longest and subequal; tarsus



FIG. 114.—Left foot of *Hoplopterus armatus*. $\times \frac{2}{3}$.

long, about twice the length of the middle toe and claw, reticulated before and behind, the scales in front somewhat larger and hexa-

gonal, but hardly forming transverse scutes; no hind toe; a basal web between the middle and outer toe.

Out of three species spread over South-east Europe, Africa and Southern Asia, one only is found within our limits.

719. **Hoplopterus armatus.** *Blacksmith Plover.*

Charadrius armatus, *Burchell, Travels* i, p. 501 (1822).

Charadrius speciosus, *Wagl., Isis*, 1829, p. 649.

Pluvianus armatus, *Jard. and Selby, Ill. Orn.* i, pl. 54 (1838).

Hoplopterus armatus, *Gurney, Ibis*, 1865, p. 271 [Durban]; *Layard, B. S. Afr.* p. 293 (1867); *Gurney, Ibis*, 1868, pp. 255, 468 [Potchef-stroom]; *Ayres, Ibis*, 1869, p. 299; *Buckley, Ibis*, 1874, p. 387; *Barratt, Ibis*, 1876, pp. 191, 212; *Bryden, Nat. and Sport*, pp. 55, 101 (1897).

Hoplopterus speciosus, *Gurney, in Andersson's B. Damara*, p. 267 (1872); *Oates, Matabeleland*, p. 325 (1881); *Shelley, Ibis*, 1882, p. 363 [Gt. Chine Pan]; *Holub & Pelz., Orn. Süd-Afr.* p. 239 (1882); *Sharpe, ed. Layard's B. S. Afr.* p. 667 (1884); *Fleck, Journ. Ornith.* 1894, p. 382; *Sharpe, Cat. B. M.* xxiv, p. 161 (1896); *Shelley, B. Afr.* i, p. 188 (1896); *Woodward Bros., Natal B.* p. 184 (1899); *Alexander, Ibis*, 1900, p. 452; *Reichenow, Vög. Afr.* i, p. 188 (1900); *Oates, Cat. B. Eggs*, ii, pp. 13, 345 (1902).

Vanellus speciosus, *Seeböhm, Geogr. Distr. Charadr.* p. 221 with fig. (1888); *Rendall, Ibis*, 1896, p. 176.

“*Setula tsipi*” (Iron-hammer or Blacksmith) of the Bechuanas (Andersson).

Description. Adult Male.—Forehead and crown, a large patch forming a collar on the base of the neck, upper and under tail-coverts, under wing-coverts, sides of the body and abdomen white; hinder half of crown, sides of the face, ear-coverts, chin, throat and breast, mantle and parapteral plumes black; upper scapulars, wing-coverts and inner secondaries lavender-grey, primary coverts and wing-quills black, the inner secondaries with a good deal of white on their inner webs, which increases in extent towards the innermost; tail-feathers white on the basal, black on the terminal half; the outer feathers with less black, and a white tip.

Iris bright carmine; bill, legs and feet black; a short, black carpal spur, measuring about 0·35; no hind toe.

Length about 12·0; wing 8·3; tail 3·5; culmen 1·15; tarsus 3·1. The sexes are alike.

Distribution.—The Blacksmith Plover was first discovered and described by Burchell, who obtained his example at Klaarwater or

Griquatown, in the district of Hay; south of the Orange River it has only been recorded from Colesberg, but further north in the Orange River Colony, Transvaal, Bechuanaland and German territories it becomes very common and is a resident, while in Natal it is only found as a migrant during the cold weather, at any rate on the coast... Beyond our limits it extends through Nyasaland and Angola, as far north as Kiliman-jaro and Lake Naivascha.

The following are the chief recorded localities: Cape Colony—Griquatown (Burchell), Colesberg (Arnot); Natal—Durban in winter (Ayres); Orange River Colony—near Bloemfontein (Barratt), Vrededorf Road (B. Hamilton); Transvaal—Barberton, January (Rendall),

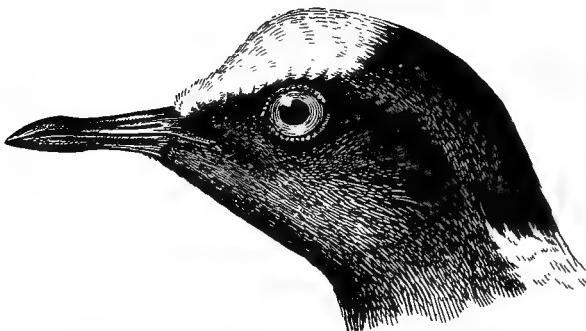


FIG. 115.—Head of *Hoplopterus armatus*. $\times \frac{1}{2}$.

Branslow's Farm, near Springs, December (Oates), Potchefstroom, April, October (Ayres); Bechuanaland—Great Chine Pan, January (Ayres), Shashi River, October (Oates), Ngami region (Andersson), Tati, January (S. A. Mus.); Rhodesia—Zambesi above Victoria Falls, September (S. A. Mus.); German South-west Africa—Great Namaqualand and Damaraland (Andersson), Windhoek and neighbourhood, June, August (Fleck), Okavango River (Andersson).

Habits.—This Plover is never found far from water; it prefers the borders of swamps and snipe-grounds, where it obtains the insects, worms and small Mollusca which form its food. It is most often met with in small flocks of about a dozen birds and is by no means shy; indeed, when nesting it will fly out at an intruder with low and piercing screams and endeavour to drive him away. Every observer comments on its noisiness, which disturbs and frightens other game-birds. The cry is a metallic harsh “click click,” some-

what resembling the ring of a blacksmith's hammer, whence it has derived its Bechuana and English name ; it may be heard both by day and night. Ayres found its nests in the neighbourhood of Potchefstroom in August and September ; they consist merely of slight excavations in the bare ground some fifty to a hundred yards away from the edge of a swamp, lined with a layer of grass roots ; the eggs are two to four in number.

The South African Museum contains two eggs of this Plover from Omanbondé in Damaraland, where they were obtained by a friend of Mr. Andersson's. These are somewhat pointed at one end and sandy-buff, profusely spotted with larger and smaller irregular black spots ; they measure 1·55 × 1·1.

Genus VI. STEPHANIBYX.

Type.

Stephanibyx, Reichenb. *Nat. Syst. Vög.* p. 18 (1852) *S. coronatus*.

Bill moderate, about as long as the middle toe and claw, with a distinct swelling at the tip ; nostrils a linear slit in a depression occupying at least two-thirds the length of the bill ; no facial wattles ; carpal spur represented by a slight projection ; wings fairly long, the second primary the longest ; secondaries broad and rounded at the tips, the difference between the longest primary and shortest secondary not equal to half the wing ; tarsus reticulated ; no hind toe ; basal web between the middle and outer toes well developed.

The species of this genus, three in number, are confined to Africa and have all been met with within our limits.

Key of the Species.

- A. Forehead black, crown black with an encircling band of white *S. coronatus*, p. 355.
- B. Forehead white, crown ashy or dusky.
 - a. Larger, wing over 8·0 ; under wing-coverts white throughout..... *S. melanopterus*, p. 357.
 - b. Smaller, wing under 8·0 ; outer and under wing-coverts grey, contrasting with the inner white ones..... *S. inornatus*, p. 358.

720. *Stephanibyx coronatus*. *Crowned Lapwing*.

Charadrius coronatus, *Bodd. Pl. Enl.* p. 49 (1783); *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 52 (1858).

Hoplopterus coronatus, *Layard, B. S. Afr.* p. 294 (1867); *Buckley, Ibis*, 1874, p. 387; *Barratt, Ibis*, 1876, p. 191; *Butler, Feilden and Reid, Zool.* 1882, p. 341; *Bryden, Gun and Camera*, p. 237 (1893); *id. Nature and Sport*, p. 102 (1897).

Vanelus coronatus, *Gurney, Ibis*, 1868, p. 49 [Upper Natal]; *Ayres, Ibis*, 1869, p. 300; *Seehoem, Geogr. Distr. Charadr.* p. 222, with fig. (1888).

Chettusia coronata, *Gurney, in Andersson's B. Damara*, p. 268 (1872); *Harting, P. Z. S.* 1874, p. 456; *Oates, Matabeleland*, p. 325 (1881); *Holub & Pelz., Orn. Sud-Afr.* p. 236 (1882); *Shelley, Ibis*, 1882, p. 363 [Spaldings]; *Sharpe, ed. Layard's B. S. Afr.* pp. 670, 855 (1884); *Fleck, Journ. Ornith.* 1894, p. 382; *Haagner, Ibis*, 1902, pp. 574, 580.

Stephanibyx coronatus, *Sharpe, Cat. B. M.* xxiv, p. 178 (1896); *Shelley, B. Afr.* i, p. 188 (1896); *Woodward Bros. Natal Bds.* p. 184 (1899); *Reichenow, Vög. Afr.* i, p. 180 (1900); *Oates, Cat. B. Eggs*, ii, pp. 16, 346 (1902); *Whitehead, Ibis*, 1903, p. 236; *Sharpe, Ibis*, 1904, p. 9 [Deelfontein].

"Kiewit" or "Kiewitje" of the Dutch; "Ititihoya" of Zulus (Woodward).

Description. Adult Male.—Centre of the crown black, surrounded by a white ring, this again is surrounded by a black ring which occupies the forehead and lores, and running above the eye and ear-coverts meets its fellow on the nape; back and wings pale olive-brown; the greater coverts with broad white tips forming with some of the inner secondaries a band of that colour; primary coverts also white; wing-quills black with concealed white bases; upper tail-coverts and tail white, the latter with a broad subterminal band of black, less broad on the outer feathers; chin and throat, lower breast, abdomen, under wing- and tail-coverts white; sides of the face, neck and breast olive-brown of a rather paler shade than that of the back; a narrow transverse band of black crosses the breast dividing the olive-brown from the white.

Iris yellow; bill bright red, the tip horn-coloured; feet bright red, the toes tinged with dark purple on the upper surface. No spur, wattle or hind toe.

Length about 12·0; wing 7·7; tail 3·5; culmen 1·2; tarsus 3·0.

The sexes are alike. A young bird is like the adult but browner, the feathers of the upper parts mottled and barred with paler. The crown is brown with sandy edges to the feathers, the ring round is sandy-buff and only white on the occiput.

Distribution.—The Crowned Lapwing is found in considerable abundance throughout the greater part of South Africa, especially on the high veld; it does not appear to reach the coastlands of Natal nor has it hitherto been recorded from Rhodesia, though this last is probably due to lack of observation. Beyond our limits it extends through Nyasaland and East Africa as far north as Somaliland and Shoa. It appears to be a resident everywhere.

The following are localities: Cape Colony—Malmesbury (Stark), Worcester (S. A. Mus.), George (Victorin), Port Elizabeth (Brown), East London, common (Wood), Peddie (S. A. Mus.), Eland's Post,



FIG. 116.—Head of *Stephanibyx coronatus*. $\times \frac{11}{12}$.

i.e., Seymour (Bt. Mus.), Deelfontein, common (Seimund), Orange River at Upington, rare (Bradshaw), near Aliwal North, common (Whitehead), Spaldings in Barkly West district (Ayres); Natal—Escourt and Newcastle (Reid), Colenso (Seeböhm), Zululand (S. A. Mus.); Orange River Colony—near Bloemfontein (Barratt), Vrededorf Road (B. Hamilton); Transvaal—Sabi River in Lydenburg (S. A. Mus.), Bisschops Farm near Springs (Oates), near Johannesburg, common (Haagner), Potchefstroom, January, June (Ayres), near Palla on Limpopo (Bryden); Bechuanaland—Tati (Oates), Ngami region (Andersson); German South-west Africa—Reheboth (Fleck), Otjimbinque and Okavango River (Andersson).

Habits.—The Kiewit or Kiewitje is found usually in small flocks of from twenty to thirty individuals especially in winter, scattered all over the country about open grassy places and often far from water; they are active both by day and night and can frequently be heard calling on moonlight nights. The call is loud and plaintive and very characteristic. They fly well and quickly but are also

good runners, and are sometimes difficult to flush. Their food consists of beetles and grasshoppers and other insects, and they are specially fond of patches of freshly-burnt grass-land, where insects are to be easily found. Mr. Wood informs me that they breed near East London early in October, but Eriksson found nests on the Limpopo in August and September as well. The nest is merely a slight depression in the ground and the clutch usually consists of three eggs; these are oval and rather pointed at one end, of a yellowish-brown ground-colour blotched all over with blackish-brown and indistinct purple, chiefly at the obtuse end; they measure about $1\cdot 6 \times 1\cdot 15$.

The South African Museum contains clutches from Potchefstroom taken in October, and from Ladysmith taken in July and August, by Mr. Roberts and Major Sparrow respectively.

721. *Stephanibyx melanopterus*. *Black-winged Plover*.

Charadrius melanopterus, *Cretzschm. in Rüpp. Atlas*, p. 46, pl. 31 (1826); *P. L. Sclater, P. Z. S.* 1866, p. 23 [Cathcart].

Charadrius spixii, *Wagler, Syst. Av. Charadrius*, p. 57, no. 7 (1827).

Vanellus melanopterus, *Gurney, Ibis*, 1860, p. 217, 1862, p. 38 [Natal]; *Seebold, Geogr. Distr. Charadr.* p. 224, with fig. (1888).

Hoplopterus melanopterus, *Layard, B. S. Afr.* p. 294 (1867).

Chettusia melanoptera, *Sharpe, ed. Layard's B. S. Afr.* p. 669 (1884).

Stephanibyx melanopterus, *Sharpe, Cat. B. M.* xxiv, p. 180 (1896); *Shelley, B. Afr.* i, p. 188 (1896); *Woodward Bros. Natal B.* p. 184 (1899); *Reichenow, Vög. Afr.* i, p. 179 (1900).

Description. Adult Male.—Forehead and forepart of the crown white; hinder portion slaty; back and wings olive-brown with a slight coppery gloss, median coverts tipped with white and with a narrow subterminal cross band of black; the greater coverts pure white; primary coverts, bastard wing and wing-quills black, the secondaries white at the base, which increases until some of the inner ones are quite white; upper tail-coverts and tail white, the latter with a broad subterminal band of black, less marked on the outer feathers; below, chin whitish, sides of the face and breast slaty, deepening into a black cross-band across the chest; rest of the lower surface, including the axillaries and under wing-coverts white. No spur or hind toe.

Iris pale yellow; eyelids scarlet; bill black; feet dark scarlet; toes dusky scarlet.

Length 10·5; wing 8·5; tail 3·0; culmen 1·05; tarsus 2·35.

A young bird has the whole head, including the forehead, brown like the back, the throat and foreneck are also light brown and the chest-band is not so distinctly marked.

Distribution.—The Black-winged Plover is found throughout Eastern and Southern Africa, from Abyssinia southwards to Nyasaland and Cape Colony. It was first described by Rüppell from Jeddah on the Arabian coast of the Red Sea. Within our limits it has hitherto only been noticed in Natal and the Cape Colony, where it appears to be a resident.

The following are recorded localities: Cape Colony—Malmesbury, Mossel Bay and Grahamstown (S. A. Mus.), East London and Port Elizabeth (Rickard), Elands Post (Atmore), Cathcart (Boulger), King William's Town, April and May (Bt. Mus.); Natal—Maritzburg, common (Fitzsimmons).

Habits.—Ayres is the only observer who has remarked on the habits of this bird; he states that it is found in open country and away from the coast, and that it is a noisy bird with a loud harsh note like that of the Green Bee-eater. It is bold and fearless, circling round in the air above dogs and endeavouring, often successfully, to drive them away.

An egg taken by Rickard from a bird shot near East London on August 23, 1869, is in the South African Museum. It is somewhat elongated, conical and tapering, of a greenish-grey ground-colour, moderately covered with darker and lighter purplish-brown spots and blotches; these are less abundant at the pointed end; it measures 1·7 × 1·1.

722. *Stephanibyx inornatus*. *Swainson's Plover.*

Vanellus inornatus, *Swains. B. W. Afr.* ii, p. 239 (1837); *Seebohm.*

Ibis, 1887, p. 350; *id. Geogr. Distr. Charadr.* p. 225, with fig. (1888).

Charadrius frontalis, *Sundev. Oefvers. K. Vet. Akad. Forh.* 1850, p. 110.

Stephanibyx inornatus, *Sharpe, Cat. B. M.* xxiv, p. 181 (1896); *Shelley,*

B. Afr. i, p. 188 (1896); *Reichenow, Vög. Afr.* i, p. 179 (1900).

Description.—*Adult.*—General colour above brown with a slight oily-greenish gloss; a white patch on the forehead; primary coverts and wing-quills black, the inner primaries and the outer secondaries tipped with white, the inner secondaries almost entirely white; tail-coverts and tail white, the middle feathers with a terminal black band, the black decreasing to the outer pair of feathers which are

pure white; below, the chin, lower breast and abdomen are white, the sides of the face, neck and upper breast slaty-brown; axillaries and inner wing-coverts white, primary under wing-coverts slaty-brown.

Iris orange-yellow; bill black; feet reddish-brown.

Length 8·75; wing 6·5; tail 2·5; culmen ·88; tarsus 2·3.

Distribution.—This Plover was first described by Swainson from the Gambia in West Africa, whence it is found as far south as the Loango; it reappears on the East Coast, where it extends from Zanzibar to Natal and inland to Nyassaland. Seeböhm first recognised this bird as a South African one; he examined specimens shot by Mr. Harry Millar near Durban, and states that it is not uncommon in that neighbourhood.

Genus VII. SQUATAROLA.

Type.

Squatarola, Leach, *Syst. Cat. Mamm. Bds. B. M. p.*

29 (1816) *S. helvetica.*

Bill moderate, about as long as the middle toe and claw; tip swollen, forming a dertrum; nostril a linear slit in a depression extending more than half way along the bill; no facial wattles or carpal spurs; wings long and pointed, first primary clearly the longest, inner secondaries long and pointed, difference between the shortest outer secondaries and the longest primary more than half the length of the wing; tail moderate and very slightly rounded; a minute rudimentary hind toe present; tarsus with reticulate scaling throughout; a basal web between the middle and outer toes.

This genus contains only the Grey Plover, a bird of wide distribution in both hemispheres.

723. **Squatarola helvetica.** *Grey Plover.*

Tringa helvetica, Linn. *Syst. Nat.* 12th ed. i, p. 250 (1766).

Tringa varia, Linn. *Syst. Nat.* 12th ed. i, p. 252 (1766).

Squatarola helvetica, Gurney, *Ibis*, 1865, p. 271 [Natal]; Layard, *B. S. Afr.* p. 295 (1867); Dresser, *B. Eur.* vii, p. 455, pls. 515, fig. 2, 517, fig. 1 (1871); Sharpe, ed. Layard's *B. S. Afr.* p. 658 (1884); *id. Cat. B. M.* xxiv, p. 182 (1896); Shelley, *B. Afr.* i, p. 189 (1896).

Squatarola varia, Gurney, in Andersson's *B. Dammaral.* p. 270 (1872).

Charadrius helveticus, *Seebohm, Geogr. Distr. Charadr.* p. 102, with fig. (1888).

Charadrius squatarola, *Fleck, Journ. Ornith.* 1894, p. 381.

Squatarola squatarola, *Reichenow, Vög. Afr.* i, p. 163 (1900).

Description. *Male in non-breeding dress.*—Above ashy-brown mottled with white; primary coverts and quills black, the former slightly edged with white, the latter with the outer half of the webs white and a good deal of white towards the basal half of the feathers; tail-coverts and tail white, the latter irregularly barred with ashy-brown, the outer feathers almost pure white; below, the chin, lower breast and under tail-coverts pure white, the sides of the face and foreneck somewhat mottled grey with dark shaft-marks. Axillaries black; under wing-coverts white, except those of the primaries, which are grey.

Iris dusky-brown; bill black; legs and feet black.

Length about 11·5; wing 7·4; tail 2·75; culmen 1·2; tarsus 1·8.

The sexes are alike in non-breeding plumage; the male in breeding plumage is black below, including the sides of the face and neck, the whole of the crown and neck above is white, the centre of the crown slightly mottled with black; the back and wings are mottled with black and white and are much darker than in the non-breeding plumage; the young bird is slightly spangled with golden on the upper surface, but can always be recognised by its black axillaries.

Distribution.—The Grey Plover is one of the most cosmopolitan of birds, being found all over the world (except perhaps in the southern part of South America) at one time of the year or another. It breeds far north on the tundras, beyond the limit of forest in Europe, Asia and America, and migrates south during the northern winter to Northern South America, Africa, India and Australia.

Within our limits it has only been found, so far as I am aware, either on or close to the sea-coast during the southern summer months. It is stated by Sharpe, on the authority of Gurney, to have occurred in the Transvaal, but it is not included in the many lists of birds of that country obtained by Ayres.

The following are localities: Cape Colony—Robben Island, March (S. A. Mus.), Zoetendals vley in Bredasdorp (Verreaux), Knysna, October and February (Marais), Port Elizabeth, common in summer (Brown), East London (Wood); Natal—Durban, January, February (S. A. Mus.), Monocusi River (Ayres); German Southwest Africa—Walvisch Bay, October and December (Andersson), May (Fleck).

Habits.—The Grey Plover is only a migrant to our shores from the northern winter, and is almost always in winter or non-breeding dress, though a bird in partial summer dress was found among Mr. Andersson's collections from Damaraland. It occurs chiefly along the tidal rivers, or where there are extensive mud flats left by the receding tides; here it may be seen, usually singly, though sometimes in pairs, running over the mud or even into the water with great rapidity in search of small crustacea, insects and worms, which form its principal food. It is very wary and suspicious, especially if it is pursued. Its flesh is very palatable. It is not probable that it will ever be found breeding south of the Equator.

Genus VIII. *ÆGIALITIS.*

	<i>Type.</i>
<i>Ægialitis</i> , Boie, <i>Isis</i> , 1822, p. 558	<i>Æ. hiaticola.</i>
<i>Ochthodromus</i> , Reichenb. <i>Nat. Syst. Vög.</i> p. 18 (1852).....	<i>Æ. wilsoni.</i>
<i>Oxyechus</i> , Reichenb. <i>Nat. Syst. Vög.</i> p. 18 (1852) ...	<i>Æ. vocifera.</i>

Resembling *Squatarola* in all essential structural characters but with no hind toe. In plumage the members of this genus have the upper surface more or less uniform brown and the lower surface white, the amount of black never exceeding a pectoral band.

Some thirty species of shore-loving birds are included in this genus; some of these are migrants with considerable seasonal changes of plumage, others are residents with very little variation in this respect. The genus is cosmopolitan. Seven species, most of them migrants from the north, are included in our fauna.

Key of the Species.

- A. Larger, wing over 5·5.
 - a. A brown patch on either side of the chest; outer tail-feathers pure white *Æ. geoffroyi*, p. 362.
 - b. A broad brown band across the chest; outer tail-feathers pale brown edged with white ... *Æ. asiatica*, p. 363.
- B. Smaller, wing under 5·0.
 - a. With two black bands across the chest..... *Æ. tricollaris*, p. 367.
 - b. With a single broad black band across the chest *Æ. hiaticola*, p. 364.
 - c. With a rufous band across the chest *Æ. venusta*, p. 370.
 - d. No defined band across the chest.

- a¹.* A white collar on the hind neck continuous with the white of the underparts.
- a².* A black line from the base of the bill to the ear-coverts and a black patch on either side of the chest *Æ. alexandrina*, p. 366.
- b².* No black on the lores or the chest *Æ. marginata*, p. 371.
- b¹.* A white collar on the hind neck separated from the white of the underparts by a black band running from the ear-coverts to the mantle *Æ. pecuaria*, p. 374.

724. *Ægialitis geoffroyi*. *Great Sand Plover*.

Charadrius geoffroyi, Wagler, *Syst. Av. Charadrius*, p. 61, no. 19 (1827); Seeböhm, *Geogr. Distr. Charadr.* p. 146 (1888); Shelley, *B. Afr.* i, p. 189 (1896); Reichenow, *Vög. Afr.* i, p. 166 (1900).
Charadrius leschenaultii, Lesson, *Man. Orn.* ii, p. 322 (1828); Layard, *B. S. Afr.* p. 299 (1867).
Ægialitis geoffroyi, Harting, *Ibis*, 1870, p. 378, pl. 11; Sharpe, ed. *Layard's B. S. Afr.* p. 664 (1884).
Ochthodromus geoffroyi, Sharpe, *Cat. B. M.* xxiv, p. 217 (1896).

Description. Adult in non-breeding dress.—General colour above brown, hind neck a little paler; wing-coverts with white tips forming a narrow wing bar, primary coverts and primaries dark brown, the shaft of the outer one white, the inner primaries and secondaries having a good deal of white about their edges and tips; rump and upper tail-coverts pale brown, white at the sides; tail-feathers ashy-brown, becoming paler towards the outermost pair, which are pure white; most of the feathers with obscure darker subterminal patches; lores, forehead, eyebrow, cheeks, sides of the neck and underparts white, with a patch of brown on either side of the upper breast; axillaries and under wing-coverts white.

Iris brown; bill black; legs greenish-grey; toes dusky.

Length about 7·45; wing 5·75; tail 2·0; tarsus 1·4; culmen 0·9.

The adult in breeding plumage has the hinder part of the crown light brown surrounded by cinnamon-rufous, which extends down the hind neck and forms a broad collar of cinnamon-rufous; the base of the forehead is white followed by a narrow black band; lores black, continued back above and below the eye along the top of the ear-coverts; a broad band of cinnamon-rufous across the chest.

Distribution.—The Great Sand Plover is a bird of wide distribu-

tion ; during the northern winter it is found along the coasts of the Indian Ocean from Cape Town to the Red Sea, including Madagascar, and thence to India, South China, the Malay Archipelago and northern Australia. It was believed by Mr. Seeböhm to breed in Japan, Formosa and Hainan, but some uncertainty attaches to this statement.

In South Africa it has only been recorded on three occasions : from Salt River, nea Cape Town, by Layard ; from Port Elizabeth, by Rickard ; and from Durban, in March, by Gordge.

Habits.—The Great Sand Plover is a shore bird never found inland ; it is usually gregarious in small flocks and feeds on minute crustacea, worms and insects, which it finds about the sea-beach.

725. *Ægialitis asiatica*. *Caspian Plover*.

Charadrius asiaticus, *Pall. Reis. Russ. Reichs* ii, p. 715 (1773) ; *Layard, B. S. Afr.* p. 299 (1867) ; *Butler, Feilden and Reid, Zool.* 1882, pp. 341, 460 ; *Holub & Pelzeln, Orn. Süd-Afr.* p. 241 (1882) ; *Seeböhm, Geogr. Distr. Charadr.* p. 144 (1888) ; *Fleck, Journ. Ornith.* 1894, p. 382 ; *Shelley, B. Afr.* i, p. 189 (1896) ; *Reichenow, Vög. Afr.* i, p. 167 (1900).

Charadrius damarensis, *Strickland, Contr. Ornith.* 1852, p. 158.

Eudromias asiaticus, *Harting, Ibis*, 1870, p. 202, pl. 5 ; *Ayres, Ibis* 1871, p. 263, 1878, p. 410 ; *Gurney, in Andersson's B. Damara* p. 271 (1872) ; *Sharpe, ed. Layard's B. S. Afr.* pp. 665, 855 (1884).

Ægialitis asiatica, *Ayres, Ibis*, 1880, p. 267.

Ochthodromus asiaticus, *Sharpe, Cat. B. M.* xxiv, p. 230 (1896).

Description. *Adult in non-breeding plumage.*—Closely resembling *Æ. geoffroyi*, but distinguished by the broader band of pale brown across the breast, by its outer tail-feathers, which are pale brown, edged with white and not pure white, by its under wing-coverts which are pale brown edged and mottled with white, and finally by its much smaller and slenderer bill, the terminal vault of which never occupies half the length of the whole bill.

Iris dusky-hazel ; bill black ; feet greenish-olive ; toes dusky.

Length 8·5 ; wing 5·5 ; tail 2·1 ; culmen 0·75 ; tarsus 1·5.

In the breeding-plumage the band across the chest is bright chestnut, followed by a narrow black band. The young bird has marked sandy edges to the feathers of the upper surface.

Distribution.—The Caspian Plover is said to breed on the steppes of Central Asia, especially in the neighbourhood of the

Caspian Sea and Sea of Aral, and its egg is described in Dresser's "Birds of Europe." It is found on migration in Arabia, and North-east and Central Africa, and spends the northern winter in South Africa.

Within our limits it is widely spread during the summer months from October to March, and is found inland as well as by the sea.

The following are recorded localities : Cape Colony—Knysna, January (Andersson), Grahamstown (Layard), Hanover, September, Port Elizabeth (S. A. Mus.), King William's Town (Trevelyan), Colesberg (Arnot), Griqualand West, October (S. A. Mus.); Natal —near Durban, December (Reid), near Newcastle, November (Feilden); Orange River Colony—Leeuwspruit, October (B. Hamilton); Transvaal—near Potchefstroom, September and January (Ayres); Rhodesia—Matopos, December (S. A. Mus.), Pandamatenga (Holub); German South-west Africa—Otjimbinque, December, February, Ondonga, November (Andersson), Reheboth, February (Fleck).

Habits.—The Caspian Plover is usually seen in small flocks of from ten to twenty individuals on the open veld, often far from water, though in some places they only appear after rain has fallen. It feeds on small insects and runs like a Courser, though not quite so rapidly. The cry is a "chuck." Though usually in the non-breeding plumage, individuals are not infrequently obtained in full summer dress. Mr. Brown writes to me that in the neighbourhood of Port Elizabeth this bird is an irregular migrant during the summer months and is found both in summer and winter plumage.

726. *Ægialitis hiaticola.* *Ringed Plover.*

Charadrius hiaticula, Linn. *Syst. Nat.* 12th ed. i. p. 253 (1766); *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 53 (1858) [Knysna]; *Layard, B. S. Afr.* p. 298 (1867); *Seeböhm, Geogr. Distr. Charadr.* p. 125 (1888); *Reichenow, Vög. Afr.* i, p. 174 (1900); *Hellmayr, Journ. Ornith.* 1902, p. 287 [Port Elizabeth and Pienaar River].

Ægialitis hiaticula, Gurney, *Ibis*, 1860, p. 218 [Natal]; *Gurney, in Andersson's B. Damara*, p. 276 (1872); *Shelley, Ibis*, 1875, p. 85; *Dresser, B. Eur.* vii, p. 467, pl. 525 (1876); *Sharpe, ed. Layard's B. S. Afr.* p. 660 (1884); *id. Cat. B. M.* xxiv, p. 256 (1896); *Shelley, B. Afr.* i, p. 190 (1896); *W. L. Slater, Ibis*, 1899, p. 114 [Inhambane].

Ægialitis intermedium (*nec Ménétr.*), Gurney, *Ibis*, 1868, p. 255; *Sharpe ed. Layard's B. S. Afr.* p. 661 (1884).

Description. *Adult Male.*—Above dark brown; a narrow frontal band continued on either side below the eye to the ear-coverts,

black; a frontal band to in front of the eye and a stripe over the eye to above the ear-coverts white; front of crown black, hind part and nape brown like the back; a white collar encircles the neck and runs forward on either side to the throat and chin; an ill-defined black collar follows the white one at the top of the mantle. Wings and wing-coverts brown, the shafts of the primaries white, an increasing amount of white on the inner primaries and secondaries, some of the latter being entirely white; central tail-feathers like the back with darker tips; lateral feathers with dark subterminal spots and white tips; the outermost pair entirely white; below white throughout except for the large triangular patch occupying the breast and extending forwards on to the foreneck.

Iris blackish-brown; bill orange, black at the tip; feet yellowish-bronze; claws black.

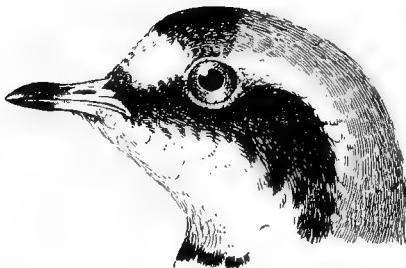


FIG. 117.—Head of *Ægialitis hiaticola*. $\times \frac{1}{2}$.

Length 7·3; wing 4·9; tail 2·0; culmen 0·5; tarsus 0·95.

The sexes are alike; young birds are lighter than the adults and have paler margins to the feathers of the upper surface; there is no black on the crown and the band on the foreneck is brown tinged with buff in the middle. In the winter dress, as generally seen in South Africa, the black on the head and breast is partially replaced by brown, and the band across the chest is more or less broken in the middle.

Distribution.—The Ringed Plover breeds in the northern hemisphere, from Cumberland Bay on the American side of Davis Straits through Greenland, Iceland, and Northern Europe and Asia as far as Lake Baikal. It is generally distributed in the British Isles both as a migrant and a resident. During the northern winter it is found throughout Africa from Cape Town to Cairo, but chiefly along the coast lines.

The following are localities : Cape Colony—Cape division, September, April (S. A. Mus.), Knysna, November, April (Bt. Mus. and Victorin), Port Elizabeth (Penthal), East London, summer (Wood) ; Natal—Durban (Shelley) ; Transvaal—Pienaar River bridge, near Pretoria, April (Penthal) ; German South-west Africa—Walvisch Bay, October (Andersson) ; Portuguese East Africa—Inhambane, September (Francis).

Habits.—Little has been written about the habits of the Ringed Plover in South Africa ; it is essentially a shore bird, and is found about mud flats and sandbanks, where it runs very swiftly and searches for small worms, insects and sand-hoppers, adding a good deal of grit and sand to aid digestion. Its note is a melodious whistle. The nest, not hitherto found in South Africa and probably not likely to be found, is merely a shallow cavity in the sand usually lined with small stones. The eggs, four in number, are pear-shaped and of a stone-buff colour spotted with black and measuring $1\cdot4 \times 1\cdot0$.

727. *Ægialitis alexandrina*. Kentish Plover.

Charadrius alexandrinus, *Linn. Syst. Nat.* i, p. 258 (1766) ; *Shelley, B. Afr.* i, p. 189 (1896) ; *Reichenow, Vög. Afr.* i, p. 169 (1900).

Charadrius cantianus, *Lath., Ind. Orn. Suppl.* p. lxvi (1801) ; *Seebold, Geogr. Dist. Charadr.* p. 168, with fig. (1888).

Ægialites alexandrinus, *Gurney, in Andersson's B. Damaral.* p. 272 (1872) ; *Sharpe, Cat. B. M.* xxiv, p. 275 (1896).

Ægialitis cantianus, *Dresser, B. Eur.* vii, p. 483, pl. 523 (1876).

Description. *Adult.*—General colour above pale earthy brown ; forehead and eyebrow white, separated from the crown by a black patch on the fore part of the head ; hind neck with a white collar continuous with the white of the lower surface ; primaries and their coverts dark brown with white shafts, the inner ones with a good deal of white to their bases, and the secondaries with white tips as well ; central tail-feathers brown, lateral ones white, intermediate ones smoky ; below white throughout, a black line from the base of the bill running through the eye to the ear-coverts, and a black patch on either side of the breast.

Iris brown ; bill black, dusky flesh on the base of the lower mandible ; legs dusky black.

Length 6·0 ; wing 4·10 ; tail 1·75 ; tarsus 1·20 ; culmen 0·30.

The female resembles the male, but has no black patch on the crown, and the patch on the side of the breast is brown not black. In non-breeding plumage the black on the crown and breast are not so well developed and are brown not black.

Distribution.—The Kentish Plover breeds throughout Europe and Asia from England to Japan, and winters in Africa, India and Australia.

It is very rarely found so far south as South Africa, in fact, the only record of its occurrence within our limits is that of Andersson, who met with it at Walvisch Bay, on the coast of Damaraland. An example obtained there by him is now in the British Museum.

Layard states that he obtained a specimen from Knysna. This individual is still in the South African Museum, but is undoubtedly a Ringed Plover (*Ægialites hiaticola*) in winter dress.

728. *Ægialitis tricollaris*. Three-banded Plover.

Charadrius indicus, *Lath.*, *Ind. Orn.* ii, p. 750 (1790).

Charadrius tricollaris, *Vieill.*, *N. Dict. d'Hist. Nat.* xxvii, p. 147 (1818); *Layard*, *B. S. Afr.* p. 296 (1867); *id. Ibis*, 1869, p. 76; *Heuglin*, *Orn. N. O. Afr.* ii. pt. 1, p. 1027, pl. 34, fig. 5 (1873); *Holub & Pelz*, *Orn. Sud-Afr.* p. 240 (1882); *Seeböhm*, *Ibis*, 1887, p. 338; *id. Geogr. Distr. Charadr.* p. 184, with fig. (1888); *Bryden*, *Gun and Camera*, p. 167 (1893); *Fleck*, *Journ. Ornith.* 1894, p. 381; *Reichenow*, *Vög. Afr.* i, p. 176 (1900).

Charadrius bitorquatus, *Licht.*, *Verz. Doubl.* p. 71 (1823); *Grill*, *K. Vet. Akad. Handl.* ii, no. 10, p. 52 (1858).

Ægialites tricollaris, *Gurney*, *Ibis*, 1865, p. 271 [Natal]; *id. in Andersson's B. Damaral.* p. 274 (1872); *P. L. Sclater*, *P. Z. S.* 1866, p. 23 [Cathcart]; *Harting*, *P. Z. S.* 1874, p. 457, pl. 60, fig. 5 [eggs]; *Shelley*, *Ibis*, 1875, p. 85; *Ayres*, *Ibis*, 1877, p. 348, 1880, p. 266; *Oates*, *Matabeleland*, p. 326 (1881); *Butler*, *Feilden and Reid*, *Zool.* 1882, p. 341; *Sharpe*, *ed. Layard's B. S. Afr.* p. 662 (1884); *Symonds*, *Ibis*, 1887, p. 334; *Harris*, *Essays and Photos*. p. 110, pl. xxvii (1901); *Haagner*, *Ibis*, 1902, pp. 574, 580; *Whitehead*, *Ibis*, 1903, p. 236; *Shortridge*, *Ibis*, 1904, p. 202.

Oxyechus tricollaris, *Sharpe*, *Cat. B. M.* xxiv, p. 247 (1896); *Shelley*, *B. Afr.* i, p. 190 (1896); *Woodward Bros.*, *Natal B.*, p. 185 (1899); *Marshall*, *Ibis*, 1900, p. 265; *Alexander*, *ibid.*, p. 454; *Oates*, *Cat. B. Eggs*, ii, pp. 22, 348 (1902); *Sharpe*, *Ibis*, 1904, p. 9 [Deelfontein].

"Strandlooper" of the Dutch, "Sea-Cow Bird" of the Hunters of the Interior.

Description. *Adult Male.*—Above uniform brown; forehead and fore part of the crown white, this colour continued as a narrow band above the eye and down the neck, meeting its fellow on the other side and encircling the crown and nape; a second white band crossing the middle of the breast, passes under the shoulder on to the

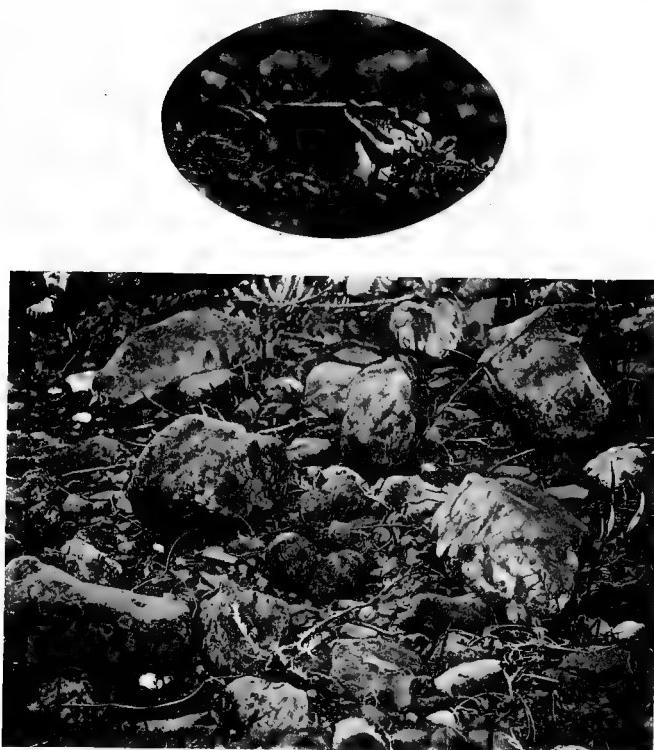


FIG. 118.—*Ægialitis tricollaris* and nest with two eggs. From photographs taken by Mr. H. E. Harris at Caledon.

back and is separated from its fellow by a black patch; all the coverts and quills brown with white tips, most developed on the inner secondaries; shafts of the primaries dark; central tail-feathers like the back, others tipped with white and with a sub-terminal patch of darker brown; outer feathers white, with a brown subterminal spot on the inner web only; below, the sides of the face and neck are ashy-grey, the ear-coverts a little darker; across the

chest are two black bands separated by a narrow white one; rest of the under parts and axillaries white; under wing-coverts ashy with white tips.

Iris hazel; wattle round the eye orange to red; bill black; base pink; legs flesh-coloured with a purplish tinge.

Length (in flesh) 6·5; wing 4·20; tail 2·3; culmen 0·65; tarsus 0·95. The sexes are alike, and there is hardly any difference between the summer and the winter plumage. The young birds have the feathers on the upper parts edged with buffish-white, and the collars on the nape and upper mantle are absent.

Distribution.—This little Plover is found throughout the greater part of Africa, from Abyssinia and from Loango, or even, perhaps, Gaboon, southwards to Cape Colony, and appears to be everywhere a resident bird.

In South Africa it is abundant throughout, as the following list of selected localities will show: Cape Colony—Cape division, March and October (S. A. Mus.), Caledon (Harris), Knysna (Victorin), Port Elizabeth and East London (Rickard), Orange River, near Upington, November (Bradshaw, in S. A. Mus.), Hanover, August (S. A. Mus.), King William's Town (Trevelyan), Port St. Johns (S. A. Mus.), Deelfontein (Seimund), Linokana, near Mafeking (Holub); Natal—Durban (Seeböhm), near Newcastle (Bt. Mus.); Orange River Colony—Kroonstad, November (Symonds); Transvaal—near Potchefstroom, March, May, August to October (Ayres); near Johannesburg, common (Haagner); common in Mashonaland (Marshall); German South-west Africa—throughout (Andersson); Portuguese East Africa—Tete (Kirk), and Mesanangue (Alexander) on the Zambesi.

Habits.—This little Sand Plover is common everywhere in South Africa, and is usually found along mud flats and on the banks of rivers and water holes, more rarely on the seashore; it is usually solitary or in pairs, sometimes in small parties, but each bird keeps, as a rule, to its respective area and if disturbed returns soon afterwards to the same place. It runs with great swiftness and has a jerky flight, seldom far prolonged; it feeds on minute crustacea, shell-fish and insects, which it obtains on the muddy beaches, and its note, a sharp squeak, is often heard at night.

This Sand Plover is in the interior in constant attendance on the Hippopotamus, probably in order to feed on insects which are attracted towards him; it has, in consequence, obtained its name often bestowed on it of "Sea-cow Bird."

The nest is merely a slight depression on the ground, generally among a few pebbles or stones, and is quite unprotected. The eggs, usually two in number, are laid in October or November in Cape Colony and the Orange River Colony, perhaps a little earlier further north (Mr. Alexander found a nest with three young in down, on August 17, on the Zambesi). They are very large for the size of the bird and measure, on an average, $1\cdot2 \times 0\cdot87$; in colour they are yellowish-white, thickly covered with zigzag lines of yellowish-brown and sepia, and in some cases slightly rubbed with blackish so as almost to conceal the ground colour.

729. *Ægialitis venusta*. *Fischer's Sand Plover*.

Charadrius venustus, *Fischer & Reichenow, Journ. Ornith.* 1884, p. 178, 1885, pl. vi, fig. 4; *Shelley, B. Afr.* i, p. 189 (1896); *Reichenow, Vög. Afr.* i, p. 173 (1900).

Ægialitis venusta, *Sharpe, Cat. B. M.* xxiv, p. 286 (1896).

Description.—General colour above very pale slaty-grey, with traces of a lighter collar at the back or the neck; primaries and their coverts dark brown, paler on their inner webs, the shafts white, at least in their middle portion; some of the inner primaries with a good deal of white on their outer webs; secondaries white-tipped; central portion of the rump and upper tail-coverts brown, sides white; central tail-feathers dark brown, like the wings, lateral ones pure white; forehead, sides of the face and neck and the whole of the lower parts, including the under wing- and tail-coverts, pure white; a semi-circular band of rusty chestnut separates the throat from the breast; quills pale brown below.

Bill black; legs and feet greenish-grey.

Length about 6·6; wing 3·9; tail 1·35; tarsus 1·1; culmen 0·60.

This description is drawn up from Mr. Whitehead's specimen, which appears to have been a female. In the male, as described by Reichenow, the chestnut chest band is margined above by black, and is continued up the side of the neck and across the crown, and there is also a distinct black line running from the eye to the base of the beak.

Distribution.—This little Plover was first obtained on the shores of the Salt Lake, near Nguruman, in the interior of German East Africa, by Fischer, in July. Neumann, a few years later, met with it on the Manjara Salt Lake, a little south of Nguruman, in November. Mr. C. F. H. Whitehead recently presented to the

South African Museum an example of this species, with a well formed egg inside, shot at the Salt Pan, near Port Elizabeth, on August 23, 1902. Mr. J. G. Brown informs me that this bird is an irregular migrant to Port Elizabeth, arriving about April and departing in October, and that he has only seen it on the edge of the water of the Salt Pans, more rarely on the sea beach. Except for these two instances, it has never before been noticed from South Africa.

Ch. rufocinctus, Reichw. ("Wiss. Ergeb. Deutsch. Teefsee-Exped. VII," p. 352, pl. xxiii.), obtained at Great Fish Bay in Southern Angola by the Valdivia Expedition, appears to be closely allied, if not identical with this species.

730. *Ægialitis marginata*. White-fronted Sand Plover.

Charadrius marginatus, Vieill., N. Dict. d' Hist. Nat. xxvii, p. 138 (1818); Layard, B. S. Afr. p. 298 (1867); Seeböhm, *Ibis*, 1887, p. 338; id. Geogr. Distr. Charadr. p. 161 (1888); Fleck, *Journ. Ornith.* 1894, p. 381; Shelley, B. Afr. i, p. 189 (1896); Reichenow, *Vög. Afr.* i, p. 170 (1900).

Charadrius leucopolius, Wagler, *Syst. Av. Charadrius*, p. 65 (1827); Grill, K. Vet. Akad. Handl. Stockh. ii, no. 10, p. 52 (1858) [Knysna].
Ægialitis marginata, Gurney, *Ibis*, 1860, p. 218 [Natal]; Gurney, in Andersson's *B. Damara*, p. 272 (1872); Shelley, *Ibis*, 1875, p. 85; Butler, *Feilden and Reid*, Zool. 1882, p. 341; Sharpe, ed. Layard's B. S. Afr. p. 659 (1884); id. Cat. B. M. xxiv, pp. 282, 747 (1896); Harris, *Essays and Photos*, p. 161, pls. 43, 44 (1901); Oates, *Cat. B. Eggs*, ii, p. 349 (1902); Shortridge, *Ibis*, 1904, p. 202.

Description. Adult in breeding dress.—General colour above pale ashy-grey; a broad frontal band of white separated from the ashy crown by a black transverse band of black, and from the white chin and throat by a narrow line of black running through the eye to the ear-coverts, a white collar round the hind neck divides the crown from the back; wing-coverts tipped with white; wing-quills brown, darker than the back, the shafts white, a good deal of white on the base and the tips of the inner ones, the innermost short secondaries quite white; two outer pairs of the tail feathers quite white, centre pair dark brown, others white with a dark brown sub-terminal spot; below white throughout, with a very faint sandy tinge on the breast.

Iris dark brown; bill black; legs dirty flesh; feet darker.

Length 6·5; wing 4·3; tail 1·75; culmen 0·65; tarsus 1·0.

Birds in non-breeding dress have no black band across the fore-

head, and the breast is without the sandy wash. A pair of these Plovers, shot on December 23 at Port St. Johns, differ from the specimens described above in having a strong sandy chestnut tinge on the nape and all over the back; they appear to be freshly moulted



FIG. 119.—*Ægialitis marginata* and nest, in sea-grass, with two eggs. From photographs taken by Mr. H. E. Harris, at Knysna.

birds and are also somewhat intermediate between this and the following species.

Distribution.—The White-fronted Sand Plover is found all round the shores of South Africa from Walvisch Bay to Durban, and appears to be a resident everywhere; further north, on both the

east and west coasts of tropical Africa, it is replaced by a smaller and rather darker subspecies (*Æ. pallida*).

The following are recorded localities: Cape Colony—Berg River mouth and Hoetjes Bay, September breeding (Stark), Cape division, January, April, July (Victorin and S. A. Mus.), Knysna, June (Victorin), December, breeding (Harris), Port Elizabeth, resident (Brown), East London, resident (Wood), Port St. Johns, September, December (S. A. Mus.); Natal—Durban Bay, August, December (Reid); German South-west Africa—Walvisch Bay, May, December (Andersson).

Habits.—The White-fronted Sand Plover is found all along the coasts of South Africa in suitable localities; Layard states that it is met with on inland waters as well, but I have never heard of its occurrence except near the sea. It is common everywhere and resident throughout the year. It does not usually associate in flocks, though a good many may be found together in one locality; it runs swiftly and does not take to flight, as a rule, unless hard pressed, it is also very clever at concealing itself in any little inequality of the ground. Its note is a low "pirrit," uttered rather softly, and its food consists of sand flies and other small insects found about the beach.

It breeds early at Walvisch Bay in April or May according to Andersson; Stark found eggs near the mouth of the Berg River in September, while at Knysna Harris obtained eggs in December. Two eggs only are laid in a slight depression on the beach, often lined with small pebbles and stones and very difficult to detect; Harris found nests also made among dried sea grass on an island at Knysna; in this case the lining was of chopped material. The eggs are somewhat pyriform in shape, though not so markedly so as in some other Sand Plovers; they are pale stone buff-coloured, marked with conspicuous spots and blotches, and sometimes scroll marks of dark brown. They measure about 1·37 × 1·0.

731. *Ægialitis marginata pallida*. *Tropical White-fronted Sand Plover.*

Charadrius pallidus, *Strickland, Contr. Ornith.* 1852, p. 158; *Shelley, B. Afr.* i, p. 189 (1896); *Alexander, Ibis*, 1900, p. 452.

Charadrius tenellus, *Hartlaub, Faun. Madag.* p. 72 (1861).

Ægialitis marginatus tenellus, *Seeböhm, Geogr. Distr. Charadr.* p. 163, pl. vii (1888).

Ægialitis pallida, Sharpe, Cat. B. M. xxiv, pp. 284, 747 (1896).

Charadrius marginatus tenellus, Reichenow, Vög. Afr. i, p. 171 (1900).

Description.—Similar to *Æ. marginata* but smaller, and having the inner secondaries brown edged with white, none being pure white.

Iris brown; bill black; feet lead-coloured.

Length 6·0; wing 4·0; tail 1·9; culmen 0·65; tarsus 1·0.

This species seems hardly worthy of more than sub-specific separation; birds from Port St. John, in Pondoland, and from Durban are clearly intermediate in character.

Distribution.—This sub-species replaces the former one on the tropical portions of the east and west coasts of Africa from Angola to the Gold Coast on the west, and from the Zambesi to Lindi, and perhaps to the Red Sea on the east. Within our limits it has only been definitely recorded from the Zambesi, near Chicowa, by Alexander, and near Feira by Dr. Stoehr.

Habits.—Alexander found this bird well distributed along the Zambesi, especially during the dry season, from June to December. He found nests on several occasions in September and October, and from observations made and recorded, believes that the eggs are hatched, to great extent, by the heat of the sun, as he found that during the day the eggs were always deserted by the parent bird and covered over with sand.

The following is Alexander's description of the eggs: "Ground colour pale buffish-brown, minutely spotted and streaked all over with reddish-brown, with faint underlying markings of a purplish colour. Average measurements 1·15 × 0·88."

732. *Ægialitis pecuaria*. *Kittlitz's Sand Plover*.

Charadrius varius (*nec Linn.*) Vieill., N. Dict. d'Hist. Nat. xxvii, p. 143 (1818); Reichenow, Vög. Afr. i, p. 171 (1900).

Charadrius pecuarius, Temm., Pl. Col. v, pl. 183 (1823); Grill, K. Vet. Akad. Handl. Stockh. ii, no. 10, p. 52 (1858) [Cape and Knysna]; Seeböhm, Geogr. Dist. Charadr. p. 158 (1888); Shelley, B. Afr. i, p. 189 (1896).

Leucopolius kittlitzii, Bp., C. R. xlili, p. 417 (1856).

Charadrius kittlitzii, Layard, B. S. Afr. p. 297 (1867).

Ægialitis kittlitzii, Newton, Ibis, 1867, p. 251; Ayres, Ibis, 1869, p. 300.

Ægialitis pecuarius, Gurney, in Andersson's B. Damara! p. 274 (1872); Harting, P. Z. S. 1874, p. 457, pl. 60, fig. 4 [egg]; Sharpe, Cat. B. M. xxiv, p. 297 (1896); Harris, Essays and Photos, p. 165, pls. 45,

46 (1901); *Oates, Cat. B. Eggs* ii, pp. 29, 350 (1902); *Whitehead, Ibis*, 1903, p. 236; *Sharpe, Ibis*, 1904, p. 10 [Deelfontein].
Ægialitis varius, *Harting, Ibis*, 1873, p. 262, pl. viii; *Ayres, Ibis*, 1878, p. 299, 1880, p. 267; *Sharpe, ed. Layard's B. S. Afr.* p. 661 (1884).

Description. *Adult Male.*—General colour above dark brown, most of the feathers with paler edges and tips; forehead white, separated from the brown crown by a black transverse band, and from the throat by a strongly marked black band running from the lores through the ear-coverts to the mantle; above this latter a band



FIG. 120.—*Ægialitis pecuaria*. Adults and nestlings. From photographs taken by Mr. H. E. Harris, at Knysna.

of white runs from above the eye, surrounding the crown and nape and joining its fellow on the other side; primary coverts and wing-quills blackish, the shaft of the first primary white, that of the third and fourth black throughout; secondaries blackish-brown, narrowly fringed with white; rump and upper tail-coverts blackish, with a few white feathers, especially at the sides; central tail-feathers blackish-brown, others paler with white tips, outermost white, with

a slight smoky tinge ; below white, the whole of the breast strongly tinged with rusty.

Iris very dark brown ; bill, legs and feet black.

Length about 6·5; wing 4·10; tail 1·75; culmen 0·65; tarsus 1·15.

The sexes are alike. A bird in non-breeding plumage has a somewhat paler breast. A young bird has no black frontal band, the loreal band is brown and does not go beyond the ear-coverts, the white markings on the head are rusty and sometimes almost obsolete ; the chest is not sandy, but has indications of dark brown shaft stripes ; there is a little white on the outer web at the base of the sixth to tenth primaries.

Distribution.—Kittlitz's Sand Plover is found all over the Ethiopian region from Senegambia on the west and Egypt on the east, southwards to Cape Colony ; it has also been obtained in the Cape Verd Islands and Madagascar, while in St. Helena it is replaced by a closely allied but somewhat larger bird (*Æ. sanctæ helenæ*), the "Wire bird" of the inhabitants. Kittlitz's Sand Plover is by no means confined to the coast, but is found about inland waters and rivers and is a resident, so far as is known, throughout its range.

In South Africa it is widely spread and fairly common. The following are the chief recorded localities :—Cape Colony—Berg River, breeding, September (Layard), Cape division, March, July, October (S. A. Mus.), Knysna, May (Victorin), Port Elizabeth, May (Rickard), King William's Town, April (Bt. Mus.), Deelfontein (Seimund), Orange River, near Aliwal, January, May (Whitehead) ; Natal—Ladysmith, breeding (Sparrow) ; Orange River Colony—Vredefort Road (B. Hamilton) ; Transvaal—Potchefstroom, January, August, October (Ayres) ; German South-west Africa—Otjimbinque, January, March, November (Andersson) ; Portuguese East Africa—Tete (Brit. Mus.).

Habits.—Kittlitz's Plover does not differ much from the White-fronted Sand Plover in habits, except that it is more frequently met with on inland waters, and that it is usually associated in small flocks ; its note is a gentle "towhit," and it feeds on small insects and water mites. In common with other Sand Plovers, it has a somewhat ludicrous habit of stopping and turning round and bobbing its head very frequently when observed or disturbed. It breeds on the Berg River in September, according to Mr. Layard, and during the same month near Potchefstroom, as reported by

Ayres, while Major Sparrow has taken fresh eggs at Mooi River in Natal on August 14.

Mr. Harris gives a very detailed account of the nesting habits of this bird near Knysna, illustrated by some life-like and characteristic photographs. The eggs are very difficult to find; they are placed in a slight hollow in the sand and covered with a few small stones and bark; when the hen leaves them, a final kick with her foot dusts over the spot. The eggs, which are two in number, are rather shorter and more pyriform than those of *Æ. marginata*; the ground colour is a creamy-buff, with a slight greenish tinge, they are very thickly covered with irregular streaks and scrolls of very dark brown, with underlying greenish-brown markings of the same nature; they measure about $1\cdot24 \times 0\cdot95$.

Subfamily II. HÆMATOPODINÆ.

Bill very long; tarsus reticulated throughout.

Genus I. HÆMATOPUS.

Type.

- Hæmatopus**, Linn. *Syst. Nat.* 12th ed. i, p. 257
 (1766)..... II. *ostralegus*.

Bill long, compressed and almost straight, culmen longer than the head or tarsus; angle of the mandible nearer the gape than the tip; nostrils elongate in a groove confined to the proximal half of the bill; wings long; first primary the longest; tail nearly square; tarsus short, but slightly longer than the middle toe and claw, covered with reticulate scales all round; no hind toe; a basal web between the middle and outer toe; toes stout with broad soles.

The Oyster Catchers form a compact genus containing about twelve species spread all over the world; only one of these is found in South Africa.

733. **Hæmatopus moquini.** *Black Oyster Catcher.*

- Hæmatopus niger*, (nec Pall.) *Temm. Man. Orn.* ii, p. 533 (1820);
Gray, *Gen. B.* iii, pl. 146 (1847).
Ostralega capensis, *Licht. Verz. Doubl.* p. 73 (1823) [nom. nud.].
Hæmatopus moquini, *Bp. C. R.* xlivi, p. 1020 (1856); *Gurney*, *Ibis*,
 1862, p. 34 [Natal]; *Layard*, *B. S. Afr.* p. 300 (1867); *Gurney*, *in*

Anderson's B. Damaral. p. 277 (1872); *Sharpe, Cat. B. M.* xxiv, p. 119 (1896); *Reichenow, Vög. Afr.* i, p. 141 (1900); *Oates, Cat. B. Eggs,* pp. 7, 344 (1902).

Hæmatopus capensis, *Sharpe, ed. Layard's B. S. Afr.* p. 672 (1884); *Shelley, B. Afr.* i, p. 193 (1896).

Hæmatopus unicolor capensis, *Seeböhm, Geogr. Distr. Chadr.* p. 309 (1888).

“Toby” of the fishermen of Saldanha Bay.



FIG. 121.—Left foot of *Hæmatopus moquini*. $\times \frac{1}{2}$.

Description. Adult Male.—Black throughout, above and below; nasal groove on the bill only extending just beyond the line of the gonys of the mandible.

Iris red; eyelids orange; bill vermillion-red; legs and feet pinky-red.

Length 21·5; wing 10·5; tail 4·5; tarsus 2·1; culmen 2·8.

A female is a little smaller than the male; wing 10·0; tarsus 2·0.

A young bird is paler than the adult, the feathers being all edged with dusky-brown.

Distribution.—The Black Oyster Catcher is found on the African coast from Gaboon on the west and the Red Sea on the east, southward to Cape Colony ; it has also been noticed at Madeira and the Canaries, where it breeds. In South Africa it is most common on the west coast, becoming somewhat rarer towards Natal. It appears to be a resident.

The following are localities : German South-west Africa—Walvisch Bay (Andersson) ; Cape Colony—Saldanha Bay, May, September, October (Stark) ; Cape division—January, June (S. A. Mus.), Robben Island (Layard), Knysna, February (Stark), Port Elizabeth and East London (Wood) ; Natal—rare (Ayres).

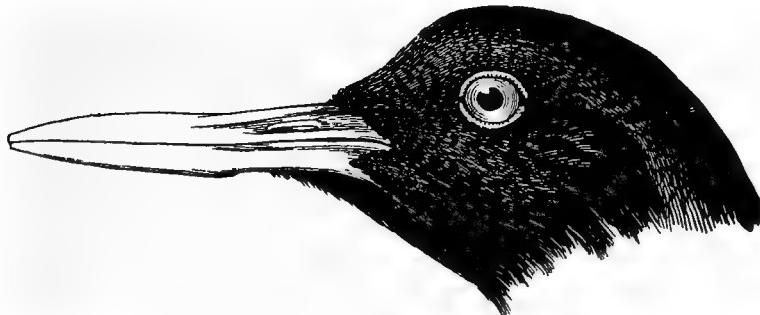


FIG. 122.—Head of *Hæmatopus moquini*. $\times \frac{2}{3}$.

Habits.—The Black Oyster Catcher is essentially a shore bird and is found both on the mainland and also on the numerous islands along the west and south coast of South Africa. It is usually seen in pairs, though found in considerable flocks by Andersson in October. It feeds on the beach on small fishes, crustacea and mollusca. Stark saw one trying to wedge a mussel from a rock and persisting in its efforts, although the waves were constantly dashing up and submerging it up to the breast. It has a shrill cry and sometimes soars to a great height ; it also runs and swims with great ease and dexterity.

The eggs have been obtained by Mr. Hugo in the neighbourhood of Simonstown, by Andersson, and also by Dr. Stark on Jut Island in Saldanha Bay in May. According to Hugo the clutch consists of two, according to Andersson of four eggs, while Stark found three

nests, one with two, and two with one egg each. These are laid in a slight depression in the sand just above high water mark without any nest. Mr. Wood found a nest at Cove Rock, near East London, on January 1, with two eggs almost ready to hatch. The nest was a mere dint in the rocks with a sprinkling of sand and was in an exposed position. Eggs in the South African Museum are slightly pointed at the acute end, pale grey-brown, marked with irregular spots and scrolls of pale purplish and very dark brown; they average 1·35 × 1·65.

Genus II. HIMANTOPUS.

Type.

Himantopus, Briss. *Orn.* v, p. 33 (1760) *H. candidus*.

Bill very long, slender, straight and pointed, without a dertrum or swelling at the tip, nearly twice as long as the middle toe and claw; nostrils linear, near the base of the bill is a shallow depression which extends about half-way along the bill; wings long and pointed, extending considerably beyond the tail, the first primary far the longest; tail short and even; legs very long, stretching far beyond the wings and tail; tarsus about three times the length of the middle toe and claw, covered with a fine network of hexagonal scales; three toes of moderate length with a slight basal web, most developed between the middle and outer toe; hind toe absent.

Seven species of this almost cosmopolitan genus are generally recognised; only the one here described is found in Africa.

734. **Himantopus candidus.** *Black-winged Stilt.*

Charadrius himantopus, Linn. *Syst. Nat.* 12th ed. i, p. 255 (1766).

Himantopus candidus, Bonn. *Enc. Meth.* i, p. 24 (1790); Layard, *B. S. Afr.* p. 328 (1867); Dresser, *B. Eur.* vii, p. 587, pls. 535, 536 (1877); Sharpe, ed. Layard's *B. S. Afr.* p. 675 (1884); Ayres, *Ibis*, 1885, p. 347; Fleck, *Journ. Ornith.* 1894, p. 382; Woodward Bros., *Natal B.* p. 188 (1899); Alexander, *Ibis*, 1900, p. 455.

Himantopus melanopterus, Meyer, *Ann. Wetter. Ges.* iii, p. 177 (1814); Burchell, *Travels*, i, p. 283 (1822); Seeböhm, *Geogr. Distr. Charadr.* p. 277 (1888).

Himantopus autumnalis, Finsch & Hartl. *Vög. Ost-Afr.* p. 758 (1870); Gurney, in Andersson's *B. Damara*, p. 315 (1872).

Himantopus himantopus, Sharpe, Cat. B. M. xxiv, p. 310 (1896); Shelley, B. Afr. i, p. 193 (1896); Reichenow, Vög. Afr. i, p. 207 (1900).

"Roodepoot elsje" (*i.e.*, Red-legged cobbler's awl) of the Dutch.

Description. *Adult Male*.—Mantle and wings black with a greenish gloss; all the rest of the plumage, including the axillaries, pure white, except the tail-coverts and tail, which are a very pale grey.

Iris rose; bill blackish; legs and feet rose-pink.

Length about 16·5; wing 9·5; tail 3·25; tarsus 4·8; culmen 2·5.

A female has the mantle, scapulars and inner secondaries ashy-brown instead of black. Young birds in their first plumage are like the female, but have white tips to the inner wing-quills and the crown of the head and nape brown or black, the amount of which appears to vary considerably.

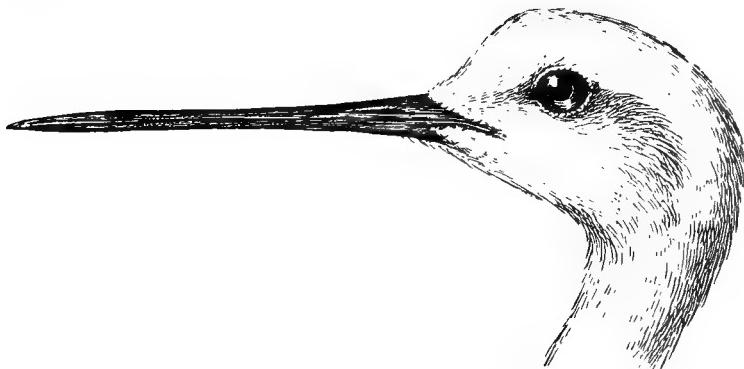


FIG. 123.—Head of *Himantopus candidus*. $\times \frac{1}{2}$.

Distribution.—The Black-winged Stilt is a resident in Southern Europe and Asia from Spain to Western China, but is only an irregular visitor to Northern Europe and the British Islands. It is spread all over Africa and Madagascar and breeds in suitable localities. It is not a very common bird in South Africa and has only been noticed in one or two isolated localities; these are: Cape Colony—Cape division, July, November (S. A. Mus.), Berg River, breeding in September (Layard), Zak River in Fraserburg (Burchell); Natal—Durban, breeding (Woodward); Transvaal—Potchefstroom, July (Ayres); Bechuanaland—Ngami region, August

(Fleck); German South-west Africa—Okavango River and Ondonga, November (Andersson); Rhodesia—Feira on the Zambesi, September (Stoebr); Portuguese East Africa—Tete (Kirk).

Habits.—The Stilt is usually found singly or in pairs in marshes or along the shores of lakes and rivers; it can be often seen wading up to its tarsal joints in shallow water looking out for small snails, insects and other water animals, on which it feeds. Its plumage makes it a conspicuous bird when on the wing, while its bright red legs and slender sharp, pointed bill have gained for it its Dutch name of “Roodepoot elsje.”

Mr. Andersson found these birds breeding in considerable abundance at the Berg River in September, but he gives no details. Eggs obtained by him on this occasion are still preserved in the South African Museum; they are pyriform in shape like that of a plover, and with little or no gloss; the ground colour is buff of various shades from pale brown to cream, generally with a tinge of greenish; the markings are irregularly rounded spots and blotches of a dark brown colour fairly evenly distributed. They measure about $1\frac{8}{10} \times 1\frac{3}{7}$.

Genus III. RECURVIROSTRA.

Type.

- Recurvirostra**, Linn. *Syst. Nat.* 12th ed. i, p. 256
 (1766) *R. avocetta*.

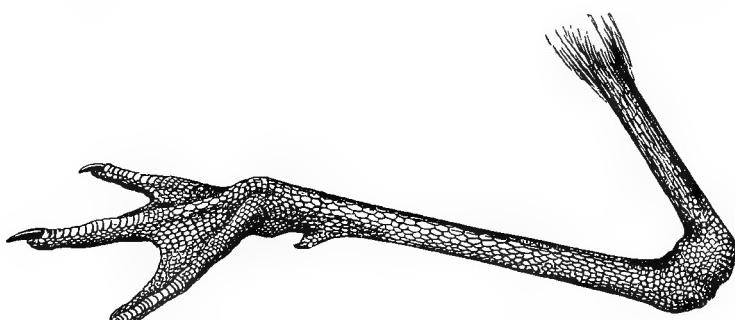


FIG. 124.—Left foot of *Recurvirostra avocetta*. $\times \frac{4}{3}$.

Bill long and pointed, more than twice the length of the head, both mandibles flattened and strongly up-curved towards the tip; nostrils linear, in an ill-marked groove hardly extending half way

along the bill ; wings moderate, hardly reaching the tip of the tail, first primary the longest ; tail moderate, slightly rounded ; legs not so long as in *Himantopus* ; the tarsus about twice the length of the middle toe and claw, and reticulated all round ; hind toe small and rudimentary, but clawed ; front toes strongly webbed more than half way down the phalanges.

Four species of Avocet are recognised, spread nearly all over the world ; only one, here described, is found in Africa.

735. *Recurvirostra avocetta*. *Avocet*.

Recurvirostra avocetta, Linn. *Syst. Nat.* 12th ed. i, p. 256 (1766) ; Kirk, *Ibis*, 1864, p. 332 ; Layard, *B. S. Afr.* p. 328 (1867) ; *id. Ibis*, 1869, p. 76 ; Gurney, in Andersson's *B. Damaral.* p. 314 (1872) ; Dresser, *B. Eur.* vii, p. 577, pl. 534 (1875) ; Butler, *Feilden and Reid, Zool.* 1882, p. 425 ; Sharpe, *cd. Layard's B. S. Afr.* p. 673 (1884) ; *id. Cat. B. M.* xxiv, p. 326 (1896) ; Shelley, *B. Afr.* i, p. 193 (1896) ; Reichenow, *Vög. Afr.* i, p. 206 (1900) ; Oates, *Cat. B. Eggs*, ii, p. 35 (1902) ; Sharpe, *Ibis*, 1904, p. 10 [Deelfontein].

Himantopus avocetta, Seeböhm, *Geogr. Distr. Charadr.* p. 289, with fig. (1888).

"Bonte Elsje" (*i.e.*, Pied Cobbler's Awl) also "Sprinken vogel" of the Dutch.

Description. Adult Male.—Forehead, crown and a broad band down the hind neck, a V-shaped patch on the mantle and inner scapulars, median coverts and inner secondaries forming a band along the wing, outer primaries and primary coverts, except at the bases, black ; rest of the plumage pure white, the tail ashy-grey.

Iris reddish ; bill black ; legs and feet leaden-black.

Length about 18·0 ; wing 8·25 ; tail 3·25 ; culmen 3·25 ; tarsus 3·2.

The sexes are alike.

Distribution.—The Avocet is found in suitable localities throughout Central and Southern Europe and Asia, from Spain to Mongolia and India. It was formerly a regular summer migrant to the British Islands, but now, chiefly owing to the drainage of the Fen country, is only an occasional visitor. It is found throughout Africa and Madagascar and breeds in suitable localities.

The following are recorded localities in South Africa, where it is by no means uncommon, and apparently resident throughout the year : Cape Colony—Berg River, breeding, Cape division and

Nelspoort, February (Layard), Colesberg, breeding (Ortlepp), Worcester, Deelfontein, January, Middleburg, July (S. A. Mus.), Port Elizabeth (Rickard); Natal—Newcastle, October (Feilden); German South-west Africa—Ondonga, Otjimbinque, Walfisch Bay, Angra Pequena (Andersson); Zambesi Valley (Kirk).

Habits.—The Avocet is usually found along the coast, at the mouths of tidal rivers and on the shores of lagoons; it is also occasionally met with inland. It is generally seen in small flocks and is somewhat shy and wary. Its diet consists of small insects and worms and crustacea; these it obtains on the mud banks, employing its curiously shaped up-curved bill with a sideways scooping action, which leaves a zigzag mark on the soft mud or sand; it may also be observed wading up to the tarsal joints in shallow water; its flesh is said to be good eating.

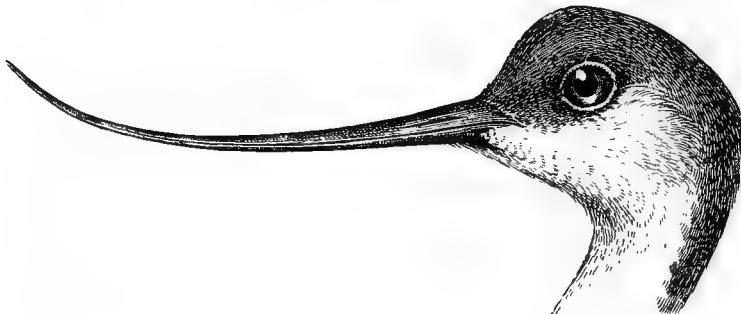


FIG. 125.—Head of *Recurvirostra avocetta*. $\times \frac{3}{5}$.

Layard obtained eggs from the Berg River, where it breeds in considerable numbers, and also from the neighbourhood of Colesberg, where Ortlepp found it nesting in the shallow vleis. Layard describes the nests as being placed on the summit of a slightly raised hummock on marshy ground which is always damp and generally flooded. The nest cavity is lined with dry sedge or grass, and the eggs, usually four in number, are placed with their pointed ends together in the centre. The young are very precocious, running and swimming beautifully within a short time after they are hatched.

Eggs in the South African Museum are pale buff, some with a slight greenish tinge spotted and scrolled with dark brown or black, together with a few underlying secondary spots of pale purplish. In shape they are pyriform and pointed and they measure about 2.0×1.45 .

Subfamily III. TOTANINÆ.

Bill variable in length; nasal groove extending along the greater part of the mandible; eyes normal; tarsus shielded in front; a distinct seasonal change of plumage.

Genus I. NUMENIUS.

Type.

Numenius, Briss. *Orn.* v, p. 311 (1760) N. arquatus.

Bill long, at least twice the length of the head, slightly down-curved and arched, the upper mandible obtuse and projecting beyond the lower; nostrils linear slits in a distinct depression extending about three quarters the length of the bill; wing

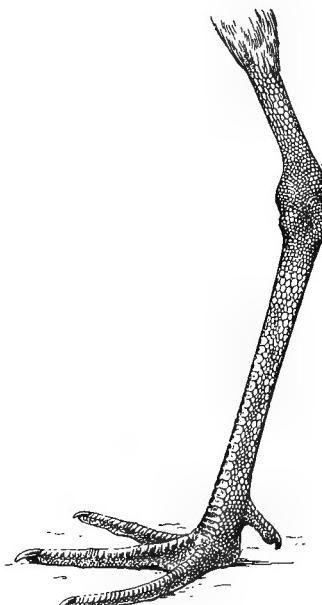


FIG. 126. — Left foot of *Numenius arquatus*. $\times \frac{1}{2}$.

moderate, first primary the longest, inner secondaries nearly as long as the primaries; tarsus stout, hardly twice the length of the middle toe and claw, covered in front for the distal two-thirds with transverse scutes, elsewhere with reticulate scales; hind toe present

and well developed ; a basal web between the anterior toes, best developed between the middle and outer ones.

About nine species of this genus, which contains the Curlews and their allies, are found distributed over the greater part of the world ; two of these, both well-known European birds, are found within our limits.

Key of the Species.

- A. Larger, wing about 11·0 ; crown like the back ; the feathers pale mottled with darker centres..... *N. arquatus*, p. 386.
- B. Smaller, wing under 10·0 ; crown dark brown with a central whitish median longitudinal band *N. phœopus*, p. 388.

736. **Numenius arquatus. Curlew.**

Scolopax arquata, Linn. *Syst. Nat.* 12th ed. i, p. 242 (1766).

Numenius arquatus, Grill, *K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 53 (1858) [Knysna] ; Gurney, *Ibis*, 1860, p. 218 [Natal] ; Layard, *B. S. Afr.* p. 322 (1867) ; Gurney, in Andersson's *B. Damaraland*, p. 299 (1872) ; Dresser, *B. Eur.* viii, p. 243, pl. 578 (1872) ; Buckley, *Ibis*, 1874, p. 388 ; Barratt, *Ibis*, 1876, p. 213 ; Ayres, *Ibis*, 1877, p. 350 ; Butler, *Feilden and Reid, Zool.* 1882, p. 424 ; Sharpe, ed. *Layard's B. S. Afr.* p. 692 (1884) ; Seebohm, *Geogr. Distr. Charadr.* p. 322 (1888) ; Sharpe, *Cat. B. M.* xxiv, p. 341 (1896) ; Shelley, *B. Afr.* i, p. 192 (1896) ; Woodward Bros. *Natal B.* p. 186 (1899) ; Alexander, *Ibis*, 1900, p. 455 ; Reichenow, *Vög. Afr.* i, p. 209 (1900) ; Haagner, *Ibis*, 1902, p. 580.



FIG. 127.—Head of *Numenius arquatus*. $\times \frac{3}{4}$.

Description. Adult Male in non-breeding plumage.—General colour above pale brown with darker brown centres to the feathers giving a striped appearance to the bird ; wing coverts dark brown edged and slightly notched with white ; primaries blackish, the outer ones with the shafts white and the inner web notched and barred with whitish ; the inner primaries and secondaries notched

on both webs ; rump and upper tail-coverts white, a few longitudinal streaks of brown on the latter ; tail white with from eight to ten transverse bars of brown ; below white, the sides of the face, neck and breast with narrow shaft-marks of brown, the chin, axillaries, under wing- and tail-coverts plain.

Iris brown ; bill brown shading to black towards the tip ; legs and feet leaden-grey.

Length about 23·5 ; wing 11·0 ; tail 4·25 ; culmen 5·25 ; tarsus 3·6 ; another specimen also sexed as a male has the culmen 6·5.

The female is larger than the male, and has, as a rule, a longer bill. In breeding-plumage the birds are darker and more heavily striped throughout.

Distribution. — The Curlew is found throughout Northern Europe and Asia from Ireland to Lake Baikal during the northern summer ; although some birds remain in the north all the year round, the bulk of them migrate southwards to Africa and India during the northern winter. During this season it is found all over Africa from the Mediterranean to the Cape, and is also a visitor to Madagascar, the Canaries and Azores.

In South Africa the Curlew is found more commonly along the coast and is rarer inland ; although it has never yet been observed breeding in southern latitudes a few individuals undoubtedly remain here all through the year.

The following are recorded localities : Cape Colony—Port Nolloth, December (S. A. Mus.), September (Stark), Cape division, August, October (S. A. Mus.), Knysna, February (Stark), March, June (Victorin), Port Elizabeth and East London (Rickard) ; Natal—Durban, March (Seeböhm), Newcastle, September, October (Butler) ; Transvaal—Potchefstroom (Barratt), Modderfontein, near Johannesburg, rare (Haagner) ; German South-west Africa—Walvisch Bay (Andersson) ; Portuguese East Africa—Zambesi, October (Alexander).

Habits. — The Curlew is a well-known English bird, and in South Africa it appears to have much the same habits as in England ; it is usually seen in small flocks about flat marshy ground and along the open sea-beach ; here it searches for its food which consists of marine insects, crustacea and worms ; it is very wary and shy and seldom allows itself to be approached within gunshot ; it also swims well according to Andersson though not by choice ; it is fat and very good eating at times.

As already stated it has not yet been known to breed in South

Africa, though here all the year round, but in England it usually nests inland, on the moors among the heather, or on grass pastures, laying four pear-shaped eggs olive-green and blotched with brown.

737. **Numenius phæopus.** *Whimbrel.*

Scolopax phæopus, *Linn. Syst. Nat.* 12th ed. i, p. 243 (1766).

Numenius phæopus, *Gurney, Ibis*, 1865, p. 272 [Natal] ; *Layard, B. S. Afr.* p. 322 (1867) ; *Gurney, in Andersson's B. Damaral.* p. 300 (1872) ; *Dresser, B. Eur.* viii, p. 227, pl. 576 (1878) ; *Ayres, Ibis*, 1877, p. 350, 1878, p. 301 ; *Sharpe, ed. Layard's B. S. Afr.* p. 693 (1884) ; *Seeböhm, Geogr. Distr. Charadr.* p. 328 (1888) ; *Sharpe, Cat. B. M.* xxiv, p. 355 (1896) ; *Shelley, B. Afr.* i, p. 192 (1896) ; *Woodward Bros. Natal B.* p. 186 (1899) ; *Reichenow, Vög. Afr.* i, p. 210 (1900).

Description. Adult Female in non-breeding plumage.—Crown of the head dark brown with a median streak and a well-marked eye-brow of whitish streaked with brown ; general colour above brown ; the wing-coverts a good deal mottled and tipped with white ; wing-quills black, the outer ones with white shafts and notched on the inner web with white, the inner ones and secondaries notched on both webs with the same colour ; lower back and rump white ; upper tail-coverts and tail white, transversely barred with brown ; below white, the sides of the face, neck, upper breast and flanks with brown streaks ; the axillaries and under wing-coverts with brown bars ; the chin, lower breast and under tail-coverts pure white.

Iris brown ; bill black, pale brown at the base of the lower mandible ; legs and feet greyish-blue to black ; claws black.

Length about 15·75 ; wing 9·25 ; tail 3·7 ; tarsus 2·45 ; culmen 3·0.

The sexes are alike ; the breeding plumage is very similar, but the rump, underparts and flanks are more profusely marked with black ; young birds are more mottled on the upper surface and have a good deal of rufescent buff on both webs of the feathers and have shorter bills.

Distribution.—The Whimbrel breeds in Iceland, the Faroes, Northern Russia and Scandinavia ; it is chiefly known as a bird of passage throughout the rest of Europe and Northern Africa, while it spends the winter in India, Tropical and South Africa and Madagascar.

As in the case of the Curlew, some individuals, generally immature, appear to spend the whole year both in the winter and summer quarters; but hitherto the Whimbrel has not been known to breed within our limits.

The following are recorded localities: Cape Colony—Port Nolloth, December (S. A. Mus.), St. Helena Bay in Malmesbury, September (Stark), Cape division, August (S. A. Mus.), Knysna, November (Marais), February (Stark); Natal—Durban Harbour, March (Seeböhm); Transvaal—Potchefstroom, November (Ayres); German South-west Africa—Walvisch Bay, September (Andersson).

Habits.—The Whimbrel is much less plentiful than the Curlew in South Africa, though it closely resembles the latter in its habits and is generally associated with it in the same localities. It is a bird of powerful flight and very wary and difficult to approach. Its food consists of small mollusca, crustacea and insects about mud flats and sand beaches. In the north it is stated to be partial to bilberries and to feed much more on the land than the Curlew; its note is a rippling whistle, "tatty tatty tet." As already stated, it has not hitherto been known to breed in South Africa.

Genus. II. TOTANUS.

Type.

Totanus, Cuvier, *Leçon Anat. Comp.* i, tabl. 2 (1800) ... *T. calidris*

Bill long and slender, usually longer than the head, straight or very slightly up-curved; tip of the upper mandible hard and bent downwards; nostrils linear slits in a groove extending at least half the length of the bill; wings moderate, first primary the longest; tail slightly rounded; tarsus rather variable in length but usually longer than the middle toe and claw, invariably covered with transverse scutes before and behind; hind toe present, anterior toes united by a web of somewhat variable development, sometimes almost rudimentary, between the inner and middle toes.

Owing to variations in the relative lengths of the bill and tarsus and in the development of the basal web between the toes, the Sandpipers have been split into a number of genera by some authors. I have here followed Mr. Blanford and other recent authors and disregarded these distinctions.

Sandpipers are generally distributed all over the world, and

those found in South Africa are all migrants from northern lands; none of the seven species found within our limits have been known to breed with us.

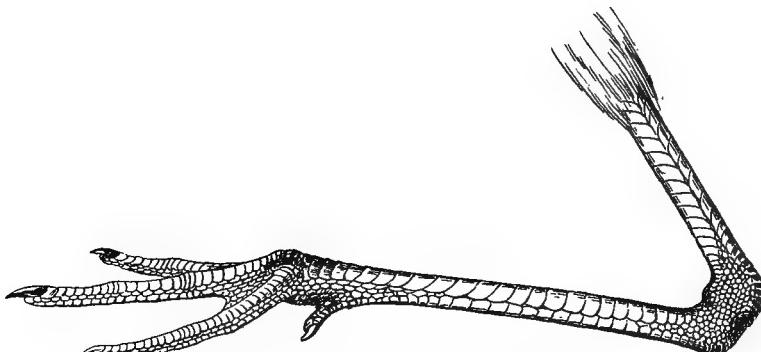


FIG. 128.—Left foot of *Totanus glottis*. $\times \frac{1}{2}$.

Key of the Species.

- A. Large, wing 6·0 or over; lower back white, tail and upper tail-coverts barred with brown.
 - a. Secondaries nearly uniform white; axillaries white *T. calidris*, p. 390.
 - b. Secondaries like the back but slightly edged with white; axillaries white freckled with brown *T. glottis*, p. 392.
- B. Smaller, wing under 6·0.
 - a. Axillaries white.
 - a¹. Bill straight.
 - a². Lower back and upper tail-coverts white *T. stagnatilis*, p. 394.
 - b². Lower back and upper tail-coverts bronzy-brown like the back *T. hypoleucus*, p. 399.
 - b¹. Bill slightly up-curved; rump and upper tail-coverts grey *T. cinereus*, p. 398.
 - b. Axillaries white with narrow V-shaped bars of brown; outer tail-feathers barred *T. glareola*, p. 395.
 - c. Axillaries brown with narrow bars of white; outer tail-feathers pure white *T. ochropus*, p. 397.

738. *Totanus calidris*. *Redshank.*

Scolopax calidris, Linn. *Syst. Nat.* 12th ed. i, p. 245 (1766).

Totanus calidris, Layard, *B. S. Afr.* p. 324 (1867); *Gurney in Andersson's B. Damaral.* p. 300 (1872); Dresser, *B. Eur.* viii, p. 157, pl. 568, fig. 1, pl. 569, fig. 2 (1875); Butler, *Feilden and Reid, Zool.* 1882, p.

425; *Sharpe*, ed. *Layard's B. S. Afr.* p. 688 (1884); *Seeböhm, Geogr. Distr. Charadr.* p. 358, with fig. (1888); *Sharpe, Cat. B. M.* xxiv, p. 414 (1896); *Shelley, B. Afr.* i, p. 191 (1896).
Totanus totanus, *Reichenow, Vög. Afr.* i, p. 220 (1900).

Description. Adult in non-breeding plumage.—Above ashy-brown, slightly streaked and mottled with darker brown; median and greater coverts notched with white; primaries and primary coverts black, some of the inner primaries variegated with white; secondaries white with blackish bases; rump white; upper tail-coverts and tail white, narrowly barred with black; below white, sides of the face, lower neck and breast streaked; flanks with wavy bars of dusky.

Iris dark brown; bill dark brown; feet yellow, web between the middle and outer toe very small.

Length about 10·5; wing 6·5; tail 2·3; culmen 1·8; tarsus 1·95.

The breeding plumage is less uniform, being mottled and barred with a good deal of reddish above and more thickly marked with blackish below.

Distribution.—The Redshank breeds throughout the whole of Europe and Central Asia to Persia and Mongolia; during the northern winter the greater number of these birds seek a more congenial climate in India and throughout Tropical and South Africa. The Redshank is certainly a rare bird in South Africa, probably only a few stragglers get so far south; Layard shot examples near Cape Town and at Knysna, and also found these birds abundant at Zoetendals Vley in Bredasdorp in November, but there is no other notice of their occurrence in Cape Colony. Reid saw a Redshank at the mouth of the Umgeni River in Natal in December. The only other records are Lake Ngami (Chapman) and Walvisch Bay (Andersson).

Habits.—No observation on the habits of the Redshank in South Africa have been made hitherto. In England it is found along the coasts in the winter months, and inland in marshy spots in summer. Its flight is quick but rather wavering, and the white on the wing shows very conspicuously. Aquatic insects, worms and crustacea form the food; it dives when wounded, and can swim. It is improbable that the Redshank will ever be found breeding within our limits.

739. *Totanus glottis.* *Greenshank.*

- Tringa littoria*, *Linn. Syst. Nat.* 10th ed. p. 149 (1758).
Scolopax totanus, *Linn. Syst. Nat.* 12th ed. p. 245 (1766).
Scolopax glottis, *Lath. Gen. Syn. Suppl.* i, p. 292 (1787).
Scolopax canescens, *Gmel. Syst. Nat.* i, p. 668 (1788).
Totanus glottis, *Grill, K. Vet. Akad. Handl. Stockh.* ii, no. 10, p. 53 (1858) [Cape and Knysna]; *Gurney, Ibis*, 1860, p. 218 [Natal]; *Layard, B. S. Afr.* p. 325 (1867); *Gurney, in Andersson's B. Damal*, p. 301 (1872); *Buckley, Ibis*, 1874, p. 388; *Sebohm, Geogr. Distr. Charadr.* p. 355, with fig. (1888).
Totanus canescens, *Sharpe and Dresser, B. Eur.* viii, p. 173, pl. 570 (1871); *Shelley, Ibis*, 1875, p. 86; *Barratt, Ibis*, 1876, p. 213; *Ayres, Ibis*, 1880, p. 268, 1884, 233; *Oates, Matabeleland*, p. 325 (1881); *Shelley, Ibis*, 1882, p. 365 [Mashonaland]; *Butler, Feilden and Reid, Zool.* 1882, p. 425; *Sharpe, ed. Layard's B. S. Afr.* p. 687 (1884); *Marshall, Ibis*, 1900, p. 265; *Alexander, ibid.* p. 454; *Whitehead, Ibis*, 1903, p. 237.
Totanus littoreus, *Fleck, Journ. Ornith.* 1894, p. 383; *Reichenow, Vög. Afr.* i, p. 217 (1900).
Glottis nebularius, *Sharpe, Cat. B. M.* xxiv, p. 481 (1896); *Woodward Bros. Natal B.* p. 187 (1899).
Totanus nebularius, *Shelley, B. Afr.* i, p. 192 (1896).

Description. *Adult in non-breeding plumage.*—Above ashy-brown, the crown and neck streaked with whitish and dark brown, the feathers of the back mottled with submarginal blackish and marginal whitish edges to the feathers; wing-coverts, inner primaries and secondaries darker than the back, slightly margined with white, and mottled towards the bases of the inner webs; primary coverts and outer primaries blackish, the shaft of the outer primary white; lower back, rump and upper tail-coverts white, the latter with a few small spots of brown; tail white with a few narrow, rather irregular, broken bands of brown, which disappear towards the outer feathers; forehead, sides of the face and lower surface throughout pure white; a patch on both sides of the breast freckled with brown; axillaries and under wing-coverts white, slightly and irregularly marked with brown; hardly any web between the middle and inner toe.

Iris dark brown; bill black towards the tip, greenish-brown at the base; legs and feet greenish-grey.

Length (in flesh) 13·5; wing 7·3; tail 3·1; tarsus 2·45; culmen 2·1.

In the breeding-plumage the back has a ruddy-brown tinge and

the feathers are black-centred; the chest and foreneck have numerous ovate black spots.

Distribution.—The Greenshank is found during the northern summer breeding in Northern Europe and Asia from Scotland to the Stanovoi mountains in Siberia; during the northern winter it migrates southwards to the Mediterranean basin, Africa, Southern Asia, the Malay regions and Australia.

In South Africa this is one of the commonest of the visiting European Waders and has been met with between October and March throughout the whole country, both on the coast and inland, wherever suitable conditions occur.

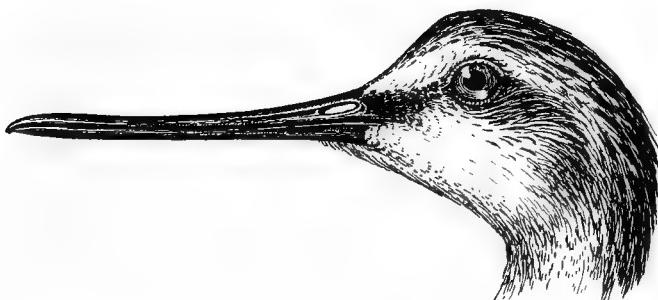


FIG. 129.—Head of *Totanus glottis*. $\times \frac{1}{2}$

The following are the chief recorded localities: Cape Colony—Port Nolloth, December, and Cape division, September, October (S. A. Mus.), Knysna, March, April (Victorin), January (Andersson), Port Elizabeth (Brown), East London (Rickards and Wood), Orange River, near Upington, December (Bradshaw), near Aliwal North, common (Whitehead); Natal—Along the coast (Seebohm), about Newcastle, September, October (Butler); Orange River Colony—Modder River, December, and Kroonstad (Barratt); Transvaal—Potchefstroom, October, September, March (Ayres), Komatiport, September (S. A. Mus.); Rhodesia—Inyati, September (Oates), about Salisbury, September (Marshall); German South-west Africa—Walvisch Bay, October, Otjimbinque, January (Andersson); Portuguese East Africa—Tete on the Zambesi, August (Alexander).

Habits.—The Greenshank is a somewhat shy bird; it is sometimes seen in flocks, especially about the seashore or the estuaries

of rivers where it often associates with Curlews, wading in the water up to its body and searching for its food ; it appears to arrive in flocks from the north and then spread over the interior of the country, where it is generally solitary. It has a very characteristic shrill cry, which it utters when on the wing ; it is a powerful flyer and feeds on fish fry, worms, insects and crustacea. The flesh, according to Andersson, is very palatable. It is not known to breed south of the equator.

740. *Totanus stagnatilis*. *Marsh Sandpiper*.

Totanus stagnatilis, *Bechst. Orn. Taschenb.* ii, p. 292 (1808) ; *Gurney, Ibis*, 1863, p. 329 [Natal] ; *Layard, B. S. Afr.* p. 324 (1867) ; *id. Ibis*, 1869, p. 76 ; *Sharpe and Dresser, B. Eur.* viii, p. 151, pl. 566 (1871) ; *Gurney, in Andersson's B. Damaral.* p. 302 (1872) ; *Sharpe, ed. Layard's B. S. Afr.* p. 690 (1884) ; *Seeböhm, Geogr. Distr. Charadr.* p. 357 (1888) ; *Sharpe, Cat. B. M.* xxiv, p. 422 (1896) ; *Shelley, B. Afr.* i, p. 192 (1896) ; *Marshall, Ibis*, 1900, p. 270 ; *Reichenow, Vög. Afr.* i, p. 220 (1900) ; *Whitehead, Ibis*, 1903, p. 237.

Description. *Adult Female in non-breeding plumage.*—General colour, including the crown, ashy-grey with slight traces of black centres and barring and of white edging to some of the feathers ; wing-coverts slightly darker than the back ; primary coverts and primaries blackish, the latter paler and freckled at the base of the inner web ; secondaries grey fringed with white, otherwise unmarked ; rump and upper tail-coverts white, the latter with a few traces of black bars ; central tail-feathers ashy, irregularly barred with black, the others white slightly freckled with blackish ; below, including the lores, eyebrow and axillaries white ; under wing-coverts slightly mottled with grey and brown.

Iris dark brown ; bill black ; legs and feet yellowish-green.

Length about 10·5 ; wing 5·3 ; tail 2·25 ; culmen 1·6 ; tarsus 2·3.

The sexes are alike ; in the breeding-plumage the general colour above is rather lighter and has a decidedly rufous tinge ; the back and wings are strongly marked with bars and blotches of black ; below, the foreneck and breast are spotted and the flanks slightly barred with black.

Distribution.—The breeding range of the Marsh Sandpiper is somewhat more southerly than that of the Redshank. It may be briefly described as extending from Southern France to Southern

Siberia through Turkestan, while during the northern winter this species is spread all over Africa, India, the Malay countries and Australia. In South Africa it is by no means uncommon and appears to be found in suitable situations throughout the greater part of the country during the southern summer months.

The following are recorded localities : Cape Colony—Clanwilliam, January, Berg River, Cape division, October, Caledon, February (S. A. Mus.), Knysna, January (Marais), George, October (Atmore), Colesberg (Ortlepp), Orange River near Upington, January, February (Bradshaw), near Aliwal North, January (Whitehead); Natal—(Ayres); Orange River Colony—Vredefort Road (B. Hamilton); Rhodesia—near Salisbury (Marshall); German South-west Africa—Hykomkop, December, and Otjimbinque, January, December, in Swakop Valley, Omanbonde (Andersson); Tete on the Zambesi (Kirk).

Habits.—Like most of the Sandpipers this species is only a migrant to South Africa during the colder months of the Northern Hemisphere. It is to be seen singly or in pairs about small pools and streamlets and on mud banks searching for its food, which consists of worms, small mollusca and fish fry. This species occasionally assumes its summer breeding-plumage before leaving South Africa, as two examples in the South African Museum, both obtained in February, from the Orange River and from the Caledon division respectively, are in this garb.

741. *Totanus glareola*. Wood Sandpiper.

Tringa ochropus glareola, Linn. *Syst. Nat.* 12th ed. i, p. 250 (1766).

Totanus glareola, Grill, *K. Vet. Akad. Handl.* ii, no. 10, p. 53 [Cape and Oudtshoorn]; Gurney, *Ibis*, 1859, p. 248, 1864, p. 360 [Natal]; Layard, *B. S. Afr.* p. 326 (1867); Gurney, in Andersson's *B. Damara*, p. 302 (1872); Shelley, *Ibis*, 1875, p. 86; Dresser, *B. Eur.* viii, p. 143, pl. 565 (1877); Ayres, *Ibis*, 1877, p. 351, 1878, p. 301, 1885, p. 348, 1886, p. 293; Oates, *Matabeleland*, p. 325 (1881); Shelley, *Ibis*, 1882, p. 366 [Spaldings]; Butler, *Feilden and Reid, Zool.* 1882, p. 425; Sharpe, ed. Layard's *B. S. Afr.* p. 690 (1884); Seebohm, *Geogr. Distr. Charadr.* p. 365, with fig. (1888); Fleck, *Journ. Ornith.* 1894, p. 383; Shelley, *B. Afr.* i, p. 192 (1896); Alexander, *Ibis*, 1900, p. 455; Reichenow, *Vög. Afr.* i, p. 222 (1900); Shortridge, *Ibis*, 1904, p. 203.

Rhyacophilus glareola, Sharpe, *Cat. B. M.* xxiv, p. 491 (1896).

Description. *Adult in non-breeding dress.*—Above, including the crown and hind neck very dark brown, slightly spotted with white, chiefly on the outer webs of the feathers; wing-coverts and primaries nearly uniform brown, the secondaries slightly margined and mottled on the inner web with white; rump like the back; upper tail-coverts white with a few blackish markings; central tail-feathers dark brown strongly notched with white, the white increasing towards the outer feathers which have a few brown spots on the outer web only; a distinct white eyebrow reaching to about the ear-coverts; sides of the face and neck, foreneck, chest and flanks whitish, profusely mottled and streaked with brown, throat and rest of the under surface white; axillaries white with a few marks of brown, under wing-coverts mottled brown and white.

Iris dark brown; bill dusky-greenish at the base; legs pale yellowish-green.

Length (in the flesh) 8·0; wing 4·7; tail 1·9; culmen 1·15; tarsus 1·4.

In breeding plumage the markings both above and below are more strongly defined, the head and neck above and the breast below are broadly streaked with blackish-brown.

Distribution.—The Wood Sandpiper, though rare in England, breeds commonly on the continent from Holland to Kamschatka, while during the northern winter it migrates south to the Mediterranean basin, Africa, South Asia, Malaysia and Australia. It is found all over Africa during the winter months (October to March) and is fairly abundant throughout South Africa where suitable conditions exist.

The following are localities: Cape Colony—Cape division, December, March, Port Elizabeth, February, Peddie, November, Port St. John's, November, Orange River near Upington, September (S. A. Mus.), Zoetendals Vley in Bredasdorp, November (Layard), Oudtshoorn, December (Victorin), Hanover, September (S. A. Mus.), Spaldings, January (Ayres); Natal—near Durban (Shelley), Maritzburg, December, Newcastle, September, October, December (Reid); Orange River Colony—Bloemfontein (Brit. Mus.); Transvaal—Potchefstroom, August to March (Ayres); Rhodesia—Inyati, September (Oates), Tati, January (S. A. Mus.), Livingstone on the Zambesi, September (S. A. Mus.); German South-west Africa—Otjimbingue, December and Ondonga (Andersson), near Barmen, January (Fleck); Portuguese East Africa—Zambesi River, August, November (Alexander).

Habits.—The Wood Sandpiper appears in Europe, at any rate, to be in the habit of perching on trees more often than other Sandpipers, hence its name. Nothing very special is known about its habits in South Africa; it is found in small flocks or sometimes in pairs about marshes and streams, and mud banks at the mouths of the rivers where it feeds on worms and small insects. Andersson states that the flesh is palatable, though in Europe it is said to have a disagreeable, musky odour. Andersson also believed that it bred in Damaraland though he did not actually find the nest, but no other evidence has been since forthcoming on this point.

The Wood Sandpiper sometimes moults into winter plumage after its arrival in South Africa; there is an example in worn summer plumage at the British Museum obtained by Ayres at Potchefstroom on August 28, and Alexander noticed the same thing with birds arriving in September on the Zambesi; they also, like many other South African Waders, assume full breeding-plumage in March, before leaving again for the north.

742. *Totanus ochropus*. *Green Sandpiper.*

Tringa ochropus, *Linn. Syst. Nat.* 12th ed. i, p. 250 (1766).

Totanus ochropus, *Layard, B. S. Afr.* p. 325 (1867); *Dresser, B. Eur.* viii, p. 135, pl. 564 (1876); *Sharpe, ed. Layard's B. S. Afr.* p. 689 (1884); *Seeböhm, Geogr. Distr. Charadr.* p. 368, with fig. (1888); *Reichenow, Vög. Afr.* i, p. 222 (1900).

Helodromas ochropus, *Sharpe, Cat. B. M.* xxiv, p. 437 (1896).

Description. Adult Male in non-breeding plumage.—General colour above uniform olive-brown, with a slight tinge of bronzy; a few obscure white spots on the margin of the scapulars and wing-coverts; wing-quills dusky-brown with very slight traces of white spots along the edges of the secondaries; upper tail-coverts white; tail-feathers white, centre pair with three dark bars, which gradually disappear towards the outer feathers, which are pure white; a supra-loral streak and indistinct eyebrow white; sides of the face and neck and fore neck white, streaked with brown; rest of the lower surface white, except for a brown patch on either side of the breast; under wing-coverts and axillaries blackish, narrowly barred with white.

Iris dusky; bill dusky above, reddish below; legs and feet greyish-blue.

Length about 8·5; wing 5·6; tail 2·1; culmen 1·4; tarsus 1·3.

The sexes are alike; in the breeding plumage the back is considerably spotted with white; the head and neck streaked with the same colour. This bird has only one posterior emargination on each side of the keel of the sternum, and has consequently been usually placed in a distinct genus, but variations of this kind are not uncommon among the Limicolæ, even in forms closely allied in outward appearance and habits.

Distribution.—The Green Sandpiper ranges all over Europe and Asia from the Atlantic to the Pacific, breeding in the north up to the Arctic circle and spending the winter in Southern Asia and Europe and throughout the greater part of Africa.

The occurrence of the Green Sandpiper in South Africa rests on the authority of Mr. Layard, who stated that he received several examples of this bird from Mr. Arnot, procured near Colesberg, and that it also occurred at Zoetendals Vley in Bredasdorp, near Knysna, and at the Kowie River mouth. No other observer or collector, however, has noticed the occurrence of this Sandpiper in South Africa, nor is there a South African example in the South African Museum. It is quite possible, therefore, that Mr. Layard was mistaken in regard to the matter.

743. *Totanus cinereus. Terek Sandpiper.*

Scolopax cinerea, *Güldenst.*, *Nov. Comm. Petrop.* xix, p. 473, pl. 19 (1774).

Terekia cinerea, *Gurney, Ibis*, 1863, p. 330 [Natal]; *Dresser, B. Eur.* viii, p. 195, pl. 572 (1871); *Gurney, in Andersson's B. Damaraland* p. 304 (1872); *Sharpe, ed. Layard's B. S. Afr.* p. 691 (1884); *Sharpe, Cat. B. M.* xxiv, p. 474 (1896); *Reichenow, Vög. Afr.* i, p. 214 (1900). *Limosa cinerea*, *Pelzeln, Novara Reise, Vög.* p. 129 (1865); *Layard, B. S. Afr.* p. 323 (1867).

Totanus terekia, *Seebohm, Geogr. Distr. Charadr.* p. 369, with fig. (1888).

Description. Adult in non-breeding plumage.—General colour above, including the crown and upper tail-coverts pale greyish-brown, with faint dark shaft stripes; wing-quills and coverts blackish, the outer primaries with white bases on the inner web, the inner ones tipped and margined with white as well, secondaries broadly tipped and margined with white; tail-feathers like the back, the outer ones paler, almost white and slightly mottled, but not barred; a white supra-loral and superciliary patch not extend-

ing behind the eye ; below white, the sides of the face and neck, the fore neck and chest slightly darker and with faint brown shaft streaks ; axillaries white.

Iris brown ; bill dark brown, yellowish at the base of the lower mandible, slightly up-curved towards the tip ; legs and feet yellow.

Length about 9·5 ; wing 4·9 ; tail 2·0 ; culmen 1·5 ; tarsus 1·1.

The sexes are alike ; in the breeding plumage the black centres of the upper surface are much more conspicuous and there is a rufescent tint ; beneath the sides of the head and breast are distinctly striated with brown.

Distribution.—The Terek Sandpiper breeds in North-east Europe and Northern Asia, from Archangel to Behring Straits ; it winters in India and the Malay regions and occasionally in Australia. In Africa it has only been noticed in a few localities and is, perhaps, of accidental occurrence.

Ayres sent home an example shot out of a flock of four or five of these birds in Durban Harbour, while there is an example in the British Museum from Walvisch Bay obtained, in October, by Andersson, who states that he has further occasionally met with this bird in the Swakop River Valley at Hykomkop and Otjimbinque, and also at Omanbonde. It has apparently escaped the notice of modern writers that Zelebor, the naturalist attached to the Austrian Novara Expedition, shot a Terek Sandpiper on the edge of a small pond near Simonstown ; beyond these I know of no other South African records.

Habits.—Andersson states that the birds met with by him were always solitary and were found feeding on the sedgy borders of sluggish streamlets. The food consists of small insects.

744. *Totanus hypoleucus*. Common Sandpiper.

Tringa hypoleucus, *Linn. Syst. Nat.* 12th ed. i, p. 250 (1766).

Tringoides hypoleucus, *Gurney, Ibis*, 1861, p. 134, 1868, p. 469 [Natal] ; *Kirk, Ibis*, 1864, p. 332 ; *Layard, B. S. Afr.* p. 327 (1867) ; *Sharpe, ed. Layard's B. S. Afr.* p. 686 (1884) ; *Ayres, Ibis*, 1885, p. 348 ; *Sharpe, Cat. B. M.* xxiv, p. 456 (1896) ; *id. Ibis*, 1897, p. 517 ; *Woodward Bros., Natal B.* p. 187 (1899) ; *Marshall, Ibis*, 1900, p. 265 ; *Alexander, ibid.* p. 455 ; *Reichenow, Vög. Afr.* i, p. 224 (1900) ; *Shortridge, Ibis*, 1904, p. 203.

Actitis hypoleucus, *Gurney, in Anderson's B. Damaral.* p. 303 (1872) ; *Shelley, Ibis*, 1875, p. 86 ; *Oates, Matabeleland*, p. 325 (1881) ; *Holub*

& Pelz. *Orn. Süd-Afr.* p. 292 (1882); Butler, *Feilden and Reid, Zool.* 1882, p. 425.

Totanus hypoleucus, Dresser, *B. Eur.* viii, p. 127, pl. 563 (1877); Seeböhm, *Geogr. Distr. Charadr.* p. 371, with fig. (1888); Shelley, *B. Afr.* i, p. 192 (1896).

Description. *Adult in non-breeding plumage.*—General colour above bronzy olive-brown, with slight traces of dark centres to the feathers; wing-coverts like the back but barred with blackish and fringed with ashy towards the tips; wing-quills blackish, the primaries white towards the base of the inner web, the secondaries with white bases and white tips, some of the inner ones almost pure white; rump, upper tail-coverts and tail like the back; the outer tail-feathers nearly white and barred with brown; a superciliary streak of white; below white with obscure dusky streaks on the sides of the face, neck and breast; a patch of dusky-brown on either side of the breast; axillaries and upper under wing-coverts pure white, lower under wing-coverts ashy-brown tipped with white.

Iris dark brown; bill dusky-brown; legs and feet yellowish-ash.

Length about 7·5; wing 4·20; tail 2·1; culmen 1·0; tarsus 0·95.

The sexes are alike; in the breeding plumage the back is much more clearly marked with black centres and arrow-shaped spots, and below the black patches on the sides of the breast and the dusky streaks are more conspicuous. Young birds are easily recognisable by the sandy and dark cross bars to the feathers of the back and the very uniform throat and breast.

Distribution.—The Common Sandpiper breeds in the northern half of Europe and Asia from the British Isles to Japan, and winters in Africa, Southern Asia, the Malay regions as far as the Solomons, and Australia; although it has been found during the breeding season in Teneriffe and North-east Africa it is not actually known to breed there.

In South Africa it is a common bird in suitable localities throughout the country during the summer months, from October to March, and has occasionally been met with earlier and later, but has not been known to breed. Like some of the other Sandpipers it assumes its summer or breeding plumage before leaving for the north, as is evidenced by an example obtained by Dr. Bradshaw near Upington, on the Orange River, on February 25, now in the South African Museum.

The following are the chief recorded localities: Cape Colony—Cape division, Paarl, March, Zoetendals vley, in Bredasdorp and

Kowie River, February (Layard), Port Elizabeth (Brown), Port St. Johns, December (S. A. Mus.), Orange River near Upington, November, February (Bradshaw); Natal—Durban Bay and Colenso (Seeböhm), Newcastle (Butler), Ulundi in Zululand (Woodward); Transvaal—Potchefstroom, August, September, May (Ayres); Rhodesia—Inyati, October, and Sibonini, December, in Matabeleland (Oates), Sesheke, January (Holub), and Feira, August (Stoehr in S. A. Mus.), both on the Zambezi, near Salisbury (Marshall); German South-west Africa—Otjimbinque, September (Andersson); Zambezi River, August (Alexander).

Habits.—The Common Sandpiper is found about running water and fresh-water lakes; in South Africa it is generally solitary; it swims and dives well, and lives on small insects and crustacea.

Genus III. PAVONCELLA.

Type.

- Pavoncella**, *Leach, Syst. Cat. Mamm. Bds. B. M.* p. 29
 (1816) *P. pugnax.*

Bill moderate, about as long as the head and shorter than the tarsus, straight and slender with the tip of the upper mandible projecting beyond the lower and bent downwards; nostrils linear, in a groove running nearly to the tip of the bill; wings moderate, first primary the longest; tail somewhat graduated, outer feathers falling short of the central ones by about the length of the hind toe; tarsus scutellated before and behind as in *Totanus*; a small web between the outer and middle toes, that between the middle and inner toes almost obsolete; only a single notch on either side of the keel of the sternum posteriorly.

This genus is hardly separable from *Totanus*, except for the fact that the male is always considerably larger than the female and assumes during the breeding season a very remarkable plumage of variable coloration and development. Only one bird, the well-known Ruff, is assigned to this genus; it is found throughout the greater part of the Old World and has accidentally occurred in America.

745. **Pavoncella pugnax.** *Ruff.*

Tringa pugnax, *Linn. Syst. Nat.* 12th ed. i, p. 247 (1766).

Philomachus pugnax, *Gurney, Ibis*, 1862, p. 34 [Natal] ; *Layard, B. S. Afr.* p. 329 (1867) ; *Gurney, in Andersson's B. Dammaral.* p. 304 (1872) ; *Ayres, Ibis*, 1873, p. 283, 1877, p. 350 ; *Buckley, Ibis*, 1874, p. 388 ; *Oates, Matabeleland*, p. 325 (1881) ; *Holub & Pelz. Orn. Süd-Afr.* p. 292 (1882).

Machetes pugnax, *P. L. Sclater, P. Z. S.* 1866, p. 23 [Cathcart] ; *Dresser, B. Eur.* viii, p. 87, pls. 557-8 (1878) ; *Butler, Feilden and Reid, Zool.* 1882, p. 425 ; *Sharpe, ed. Layard's B. S. Afr.* p. 685 (1884) ; *Ayres, Ibis*, 1885, p. 348.

Totanus pugnax, *Seeböhm, Geogr. Distr. Charadr.* p. 373 (1888) ; *Fleck, Journ. Ornith.* 1894, p. 383 ; *Reichenow, Vög. Afr.* i, p. 216 (1900).

Pavoncella pugnax, *Sharpe, Cat. B. M.* xxiv, p. 500 (1896) ; *Shelley, B. Afr.* i, p. 191 (1896) ; *Woodward Bros. Natal B.* p. 186 (1899) ; *Sharpe, Ibis*, 1904, p. 11 [Deelfontein].

Description. *Adult Male in non-breeding plumage.*—General colour above pale brown with darker brown centres to the feathers ; wings like the back but slightly darker, the greater coverts broadly tipped with white ; primaries with white shafts ; the secondaries white on the base of the inner web and along the outer margins ; rump and central upper tail-coverts like the back, the lateral upper tail-coverts pure white ; tail-feathers brown with white margins ; sides of the face, neck all round, and chest and flanks ashy slightly mottled with darker, rest of the lower surface and throat white ; axillaries and under wing-coverts white.

Iris dark brown ; bill dark brown ; legs and feet varying from greenish-olive to flesh-colour.

Length about 9·5 ; wing 6·85 ; tail 2·5 ; tarsus 1·8 ; culmen 1·2.

The female resembles the male in plumage but is much smaller ; wing 5·85 ; tarsus 1·7 ; culmen 1·2. The males in breeding dress vary to such an extent that hardly two specimens are alike ; but there are generally yellow tubercles on the face and crown, and the feathers on the back of the head are elongated to form the ruff which may be white, black, chestnut or orange, and often has a metallic-green gloss ; the back, scapulars and inner wing-coverts are variegated with ashy, but the primaries, secondaries, lesser and primary wing-coverts, lower back and rump always remain the same at all times of the year. The females in summer have the feather of the upper surface blackish with sandy-buff borders, and the tertaries are mottled with buff and black bars.

Distribution.—The Ruff nests throughout the northern part of the Old World from Holland to the Amoor Valley. It formerly bred freely in the marshy parts of England, but drainage and the efforts of collectors have reduced its number, and it is now only a visitor. During the northern winter months the Ruff retreats to Africa, North India and Burma.

In South Africa the Ruff is widely distributed and commonly met with between the months of August and March wherever suitable conditions occur.

The following are recorded localities : Cape Colony—Cape division, September, Upington on the Orange River, November (S. A. Mus.), Knysna, November (Marais), Port Elizabeth (Brown), King William's Town (Trevelyan), Deelfontein, January to March, common (Siemund); Natal—Durban (Ayres and Woodward), Newcastle, September (Butler); Orange River Colony—Vredefort Road (B. Hamilton); Transvaal—Potchefstroom, August, September, January (Ayres); Rhodesia—Ramaqueban River, November (Oates); German South-west Africa—Otjimbinque, August, Walvisch Bay, October (Andersson), Reheboth, October (Fleck), Omaruru, November, February (Eriksson).

Habits.—The Ruff is one of the most interesting of birds and affords several problems to the student of variation which have remained hitherto unsolved. Unfortunately, in South Africa there is no opportunity for studying these problems, as the birds are only here during the non-breeding season.

The Ruff is the only polygamous wading bird, and correlated apparently with this habit is the remarkable plumage of the male in the breeding dress. So variable is this plumage that it is almost impossible to describe it exactly, as hardly any two of the birds are quite alike. This variation has no geographical significance, but is purely individual, and it has been proved in the case of birds in captivity that each bird regains each year during the breeding season the same plumage it had the previous year. In the spring of the year the males "hill," *i.e.*, assemble on knolls of ground and contend with one another for the females.

The birds on arrival in South Africa have still sometimes a portion of their nuptial plumage, though the greater part is lost at the end of the breeding season before starting south; on the other hand, the ornamental dress is not put on until it has again reached its northern breeding grounds.

In South Africa the Ruff is generally seen in small flocks of

from three to twelve birds, mostly females, with perhaps one male distinguished by its greater size; they are chiefly found inland in moist situations, but also on the coast, especially about tidal mud banks at the mouths of rivers. Their food, like that of other Waders, consists of worms, insects, and small crustacea, as well as wheat and other grains. It need hardly be added that the Ruff has not been known to breed south of the equator.

Genus IV. TRINGA.

Type.

Tringa, Briss. *Orn.* v. p. 177 (1760) *T. canutus*.

Bill long and slender, generally longer than the tarsus; nostrils linear ovals near the base of the mandible, in a groove running almost the entire length of the bill; wings long and pointed, first primary the longest, difference between the longest and shortest primary more than twice the length of the culmen; tail square or slightly rounded, sometimes the two central feathers elongated and pointed; tarsus moderate, with transverse scutes before and behind; hind toe present; anterior toes cleft to the joint without webs.

As in the case of the Sandpipers, so here various slight modifications of the comparative length of the bill and tarsus have been utilised by some authors to form a number of separate genera for the Stints which comprise this genus; but it is quite obvious that the various forms are very closely allied, and it seems more logical and convenient to place them together under one generic heading.

The species are about twenty-two in number and nearly all are migratory, breeding in the Arctic regions and wintering to the south throughout the tropical and temperate zones of both hemispheres; four species reach South Africa.

Key of the Species.

A. Bill straight.

- a. Larger, wing over 6·0; upper tail-coverts white banded with brown..... *T. canutus*, p. 405.
- b. Smaller, wing under 6·0; upper tail-coverts like the back, not banded.
 - a'. Larger, wing over 5·0; tarsus longer than the middle toe and claw *T. bairdi*, p. 406.

- b¹. Smaller, wing under 4·0; tarsus equal to the middle toe and claw *T. minuta*, p. 406.
- B. Bill slightly decurved towards the tip; upper tail-coverts white *T. subarquata*, p. 408.

746. *Tringa canutus. Knot.*

Tringa canutus, Linn. *Syst. Nat.* 12th ed. i. p. 251 (1766); *Gurney, Ibis*, 1868, p. 260 [Walvisch Bay]; *id. in Andersson's B. Damaral.* p. 306 (1872); *Dresser, B. Eur.* viii, p. 77, pls. 555-6 (1877); *Sharpe, ed. Layard's B. S. Afr.* p. 683 (1884); *Seeböhm, Geogr. Distr. Charadr.* p. 422, with fig. (1888); *Sharpe, Cat. B. M.* xxiv, p. 593 (1896); *Shelley, B. Afr.* i, p. 191 (1896); *Reichenow, Vög. Afr.* i, p. 229 (1900).

Description. *Adult in non-breeding plumage.*—Above ashy-grey, uniform except for a few dusky bars on the rump; upper tail-coverts white, barred with black; greater coverts tipped with white; quills dusky-brown, the shafts white; the inner primaries and secondaries margined with white; tail ashy-grey with white shafts and margins; forehead and patch above the ear-coverts white, lores dusky-grey; sides of the face and below white; the sides of the face and neck, breast and flanks with small spots or bars of brown; axillaries white with a few dusky bars.

Iris dark hazel; bill and feet black.

Length about 10·0; wing 6·4; tail 2·5; tarsus 1·2; culmen 1·3.

In the breeding plumage the back and head are mottled with black, chestnut and a little white; beneath the whole of the under surface of the body is rich chestnut, including the eyebrow and sides of the face.

Distribution.—Hitherto very few absolutely authentic eggs of the Knot have been obtained, but there can be no doubt that it breeds in North Greenland and other parts of Arctic America, as well as in the Taimyr Peninsula in Siberia (*cf. Ibis*, 1904, p. 232) and passing south on migration, winters in Southern Asia, Australia, South America and Africa.

The Knot is not a common bird anywhere in Africa; it has been noticed on the Gambia and the Gold Coast in the west, and in the Nile Valley in the east, while in South Africa the only authentic record of its occurrence is that of Andersson, who obtained two specimens at Walvisch Bay in Damaraland on October 20 and November 4, 1863. Layard states that Verreaux informed him that he had shot Knots in Algoa Bay, but no one appears to have met with this bird within our limits since.

747. *Tringa bairdi.* *Baird's Sandpiper.*

Actodromus bairdi, Coues, *Proc. Acad. Nat. Sci. Philad.* 1861, p. 194. *Tringa bairdi*, Harting, *Ibis*, 1870, pp. 151-2 [Walvisch Bay]; Gurney, in Andersson's *B. Damaral.* p. 308 (1872); Sharpe, ed. Layard's *B. S. Afr.* p. 682 (1884); Seeböhm, *Geogr. Distr. Charadr.* p. 444, with fig. of tail (1888); Reichenow, *Vög. Afr.* i, p. 232 (1900). *Heteropygia bairdi*, Sharpe, *Cat. B. M.* xxiv, p. 570 (1896).

Description. *Adult Male.*—General colour above dusky, with darker centres to the feathers and with paler edges and tips, especially on the secondaries and primaries; quills dusky, almost black, ashy on the inner webs; tail uniform brown, the two centre feathers darker with dark shafts, the others paler brown with white shafts. Below white, chest isabelline, finely streaked with dusky centres to the feathers; axillaries and under wing-coverts white; those near the edge of the wing with slight brown mottling.

Iris dark brown; bill black; legs and feet slaty-black.

Length about 7·0; wing 5·20; tail 1·90; culmen .85 to 1·10; tarsus .85.

In the breeding plumage this bird is more brightly coloured, having a good deal of bright rufous edging to the feathers of the upper surface and the spots and streaks on the breast band very much more numerous and distinct.

Distribution.—Baird's Sandpiper is an American bird which breeds in Alaska and the Valley of the Mackenzie River, and passing south on migration, winters in South America as far south as Chili. It has only once occurred within our limits, or ever, so far as I am aware, in the Old World. An example was obtained by Andersson at Walvisch Bay on October 24, 1863, and was identified and described by Harting.

748. *Tringa minuta.* *Little Stint.*

Tringa minuta, Leisl. in Bechst. *Naturg. Deutschl. Nachtr.* i, p. 74 (1812); Gurney, *Ibis*, 1865, p. 272 [Natal]; 1868, p. 469; Layard, *B. S. Afr.* p. 331 (1867); Sharpe and Dresser, *B. Eur.* viii, p. 29, pls. 549-52 (1871); Gurney, in Andersson's *B. Damaraland*, p. 310 (1872); Shelley, *Ibis*, 1875, p. 86; Ayres, *Ibis*, 1878, p. 301, 1880, p. 268, 1885, p. 348; Butler, *Feilden and Reid, Zool.* 1882, p. 425; Sharpe, ed. Layard's *B. S. Afr.* p. 681 (1884); Seeböhm, *Geogr. Distr. Charadr.* p. 435, with fig. (1888); Fleck, *Journ. Ornith.* 1894,

p. 383; *Shelley, B. Afr.* i, p. 191 (1896); *Reichenow, Vög. Afr.* i, p. 233 (1900); *Shortridge, Ibis*, 1904, p. 203.
Limonites minuta, *Sharpe, Cat. B. M.* xxiv, p. 538 (1896).

Description.—*Adult in non-breeding plumage.*—Above ashy-brown with dark shaft-marks to most of the feathers; a rather paler collar round the hind neck; greater wing-coverts tipped with white forming a wing-bar; wing-quills blackish, the inner primaries and secondaries margined with white, all paler towards the base of the inner web; rump and upper tail-coverts dusky-black in the centre white at the sides; tail dark brown on the centre feathers, pale smoky on the outer feathers; lores, sides of the face and neck light brown, slightly streaked with darker; forehead, supra-loral stripes, lower surface and axillaries pure white, slightly ashy on the foreneck and breast; edge of the wing mottled with brown, under primary coverts ashy, tipped with white.

Iris dark brown; bill and legs black.

Length (in flesh) 5·5; wing 3·8; tail 1·35; culmen .75; tarsus .88.

In the breeding plumage the upper surface is sandy-rufous mottled with black and white; the throat and neck are tinged with rufous, and the chest is ashy mottled with dusky spots.

Distribution.—The Little Stint breeds in the northern part of the Old World from North Cape to the Yenesei, east of which it is replaced by a closely allied subspecies; passing south on migration, it winters throughout Africa, including Madagascar, and Southern Asia from Persia to Burma.

In South Africa it is fairly common from October to March in suitable situations, both along the coast and also inland.

The following are localities: Cape Colony—Cape division, September, December (S. A. Mus.), February (Shelley), Port Elizabeth, common (Brown), East London (Rickard), Port St. John's, November (S. A. Mus.), Orange River near Upington, November (Bradshaw); Natal—near Newcastle, October (Reid); Orange River Colony—Rhenoster River, May (Ayres); Vredfort Road (B. Hamilton); Transvaal—Potchefstroom, October, December, April (Ayres); Bechuanaland—Ngami region (Andersson); German South-west Africa—Walvisch Bay, November, January, Otjimbinque, December, Ondonga, October (Andersson), Reheboth, October (Fleck).

Habits.—This little Wader is generally seen about mud-flats and marshy places either near the sea or often inland along rivers and

on the edges of marshes. It usually associates in flocks, and is shy and rapid in its flight; as is the case with other Waders its food consists mostly of insects, small crustacea and aquatic worms. Traces of the breeding plumage are sometimes noticed on its arrival here in September and October, while Gurney notes that in an example obtained at the beginning of May in the Orange River Colony by Ayres, almost the entire nuptial plumage had been assumed.

749. **Tringa subarquata.** *Curlew Sandpiper.*

Scolopax subarquata, *Guldenst. Nov. Comm. Petrop.* xix, p. 471 (1774).
Tringa subarquata, *Gurney, Ibis*, 1862, p. 34 [Natal]; *Layard, B. S. Afr.* p. 330 (1867); *id. Ibis*, 1869, p. 76; *Gurney, in Andersson's B. Dammaral.* p. 306 (1872); *Dresser, B. Eur.* viii, p. 59, pl. 553 (1878); *Ayres, Ibis*, 1878, p. 411; *Butler, Feilden and Reid, Zool.* 1882, p. 425; *Sharpe, ed. Layard's B. S. Afr.* p. 682 (1884); *Seeböhm, Geogr. Distr. Charadr.* p. 419 (1888); *Fleck, Journ. Ornith.* 1894, p. 383; *Shelley, B. Afr.* i, p. 190 (1896); *W. L. Slater, Ibis*, 1899, p. 144 [Inhambane]; *Reichenow, Vög. Afr.* i, p. 230 (1900); *Shortridge, Ibis*, 1904, p. 203.

Ancyllochilus subarquatus, *Sharpe, Cat. B. M.* xxiv, p. 586 (1896).

Description. Adult in non-breeding dress.—Above ashy-brown with darker shaft-streaks to most of the feathers, the head slightly streaked with white; greater wing-coverts tipped with white; primary coverts and quills dusky-brown, the inner primaries and secondaries margined with white, all paler towards the base of the inner webs; centre of the rump like the back; sides and upper tail-coverts white; tail-feathers ashy-brown margined with white and white at the base as well as on the outer feathers; supra-loral stripe and eyebrow, lower surface and axillaries white, breast and fore-neck slightly soiled with narrow lines of dusky-brown; edge of the wing above and beneath mottled with brown and white; bill decurved towards the tip.

Iris blackish; bill and legs black.

Length 8·75; wing 4·8; tail 1·6; culmen 1·5; tarsus 1·1.

In the breeding dress the back is deep cinnamon-rufous mottled with white edges and black centres to the feathers; upper tail-coverts with a few black bars and a tinge of rufous; sides of the face and under surface of the body rich chestnut with distinct remains of hoary margins to the feathers; vent and under tail-coverts white, with a slight tinge of rufous and a few black spots.

Examples shot early in the season in South Africa (Upington August 31, and Inhambane September 5), are intermediate in character, retaining traces of the chestnut and black mottling on the back and of the chestnut below, while a specimen in full breeding dress was brought alive to Mr. Layard on April 26, and is still preserved in the South African Museum.

Distribution.—It is only quite recently that the breeding-grounds of the Curlew Sandpiper have been discovered and the eggs obtained. On July 3, 1897, Mr. Hugh L. Popham found a nest with four eggs on a little island at the mouth of the Yenesei River in Siberia (see Newton, *Proc. Zool. Soc.* 1897, p. 890, pl. 51, figs. 1-4). On migration this bird is found throughout the greater part of Europe and Asia, while it winters in the Mediterranean basin, Africa and South Asia as far as Australia. It has accidentally occurred in Alaska, Eastern and North America and the West Indies.

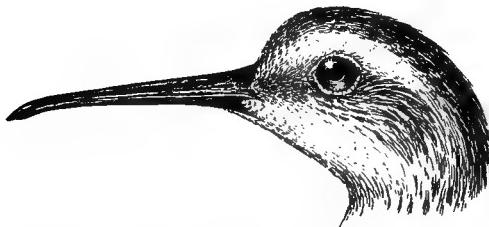


FIG. 130.—Head of *Tringa subarquata*. $\times \frac{1}{2}$

In South Africa the Curlew Sandpiper is abundant during the northern winter months from October to March, though sometimes arriving in August; it is met with chiefly along the sea-coast, but also inland in suitable localities.

The following are recorded occurrences: Cape Colony—Cape division, September, November, April (S. A. Mus.), Saldana Bay, September (S. A. Mus.), Port Elizabeth (Brown), Port St. John's, September (S. A. Mus.), Orange River, August 31 (Bradshaw); Natal—near Durban, December (Reid), January (S. A. Mus.); Orange River Colony—Vredfort Road (B. Hamilton); Transvaal—Potchefstroom, November (Ayres); German South-west Africa—Walvisch Bay, October, November, April (Andersson), Reheboth, October (Fleck); Portuguese East Africa—Inhambane, September (Francis).

Habits.—Andersson found the Curlew Sandpiper the commonest of all the migratory Waders at Walvisch Bay and along the neighbouring coast, and states that it congregates in flocks, not infrequently in company with the Little Stint and the Sanderling. Its flight is strong and swift, and its food consists of aquatic insects, small crustacea and worms, which it obtains on the mud banks at the mouths of rivers and in similar situations.

Genus V. CALIDRIS.

Type.

Calidris, Briss. *Orn.* v, p. 226 (1760) C. arenaria.

Bill moderate, about equal to the tarsus, slender and flexible, almost straight; nostrils linear ovals in a depression extending nearly the whole length of the bill; wings long, first primary longest; tail nearly square, but the two central tail-feathers pointed



FIG. 131.—Left foot of *Calidris arenaria*. $\times \frac{1}{2}$

and projecting slightly beyond the others; tarsus transversely scutellated before and behind; no hind toe; anterior toes cleft to the base and without webs.

This genus was formed for the reception for a single species, the Sanderling, which is found nearly all over the world; it is closely allied to the Stints but easily distinguished by the absence of the hind toe.

750. **Calidris arenaria.** *Sanderling.*

Tringa arenaria, Linn. *Syst. Nat.* 12th ed. i, p. 251 (1766); *Seebohm, Geogr. Distr. Charadr.* p. 431, with fig. (1888).

Calidris arenaria, Gurney, *Ibis*, 1865, p. 272 [Natal]; Layard, *B. S. Afr.* p. 332 (1867); Gurney, in Andersson's *B. Damaral.* p. 311 (1872); Shelley, *Ibis*, 1875, p. 86; Dresser, *B. Eur.* viii, p. 101, pls. 559, 560

(1877); *Sharpe*, ed. *Layard's B. S. Afr.* p. 684 (1884); *id. Cat. B. M.* xxiv, p. 526 (1896); *Shelley*, *B. Afr.* i, p. 191 (1896); *W. L. Slater*, *Ibis*, 1899, p. 114 [Inhambane]; *Reichenow*, *Vög. Afr.* i, p. 226 (1900); *Shortridge*, *Ibis*, 1904, p. 203.

Description. Adult in non-breeding plumage.—General colour above pale ashy-grey, with lighter edges and dark shaft-stripes to most of the feathers; primaries blackish, paler towards the base of the inner web and with white shafts, inner secondaries chiefly white; central feathers of the rump and upper tail-coverts like the back, lateral feathers white; central tail-feathers ashy-brown, margined with white, lateral ones rather paler, all with white shafts; forehead, lores, sides of the face and underparts throughout white; axillaries and under wing-coverts white, the edge of the wing slightly mottled with brown; hind toe entirely absent.

Iris, bill and legs black.

Length 7·75; wing 4·6; tail 2·2; culmen .90; tarsus .93.

In the breeding plumage the upper surface is cinnamon-rufous mottled with black centres to the feathers, which have ashy edges; sides of the face, throat and breast deep cinnamon-rufous mottled with black centres, rest of the under surface white.

Birds on arrival in South Africa in September have the upper surface considerably mottled with black and sometimes with chestnut as well; in one example in the South African Museum (St. John's River, September 2) there are traces of the cinnamon on the throat and foreneck, while the breast is mottled with brown. The summer plumage is also beginning to be assumed before the birds leave in May.

Distribution.—The Sanderling breeds very far north along the shores of the Arctic Ocean, and eggs have hitherto been only obtained in Grinnell Land, Greenland and Iceland. It passes southwards along the coasts or across the northern continents on migration, and winters in all the southern continents—South America, South Asia, Africa and Australia, besides occurring in most of the islands of the Atlantic, Indian and Pacific Oceans as a wanderer.

In South Africa the Sanderling is abundant in the southern summer months along the coast, but does not appear to have been met with inland.

The following are recorded localities: Cape Colony—Port Nolloth, December (S. A. Mus.), Hondeklip Bay, September (Stark), Cape division, July, October (S. A. Mus.), Port Elizabeth and East

London (Rickards), Port St. John's, September, October (Shortridge); Natal—near Durban, March (Seebohm); German Southwest Africa — Walvisch Bay, October, December, April, May (Andersson); Portuguese East Africa — Inhambane, September (Francis).

Habits.—As its name implies, the Sanderling is chiefly found along the seashore, which it prefers to the mud banks generally affected by other wading birds. It is usually to be seen in South Africa in considerable flocks, close to the breakers, running in and out of the water with considerable rapidity, and sometimes flying off at a great pace. Its food, which it obtains by using its bill like a snipe, consists chiefly of insects and small crustacea, but it will also eat grain on occasions, as Francis found the stomachs of some individuals shot by him crammed with millet grains and mealie meal. A very good account of its habits is given by Andersson as follows: “The Sanderling hardly ever leaves the immediate edge of the water, where it is amusing enough to observe it feeding along the beach on which the surf is breaking, now running away from the threatening waters, then turning, as if by instinct, the moment they have spent their fury, closely following the receding waves and rapidly seizing the minute marine animals upon which it subsists. The cry of this species is a kind of shrill chirping call, low and short, but shrill. Its flesh is very palatable; and being plump little birds, they are worth the trouble of shooting and cooking.”

Subfamily IV. SCOLOPACINÆ.

Bill long and slender, with a nasal groove along the greater part of its length; eyes very large and placed far back in the head; no distinct seasonal change of plumage.

Genus I. GALLINAGO.

Type.

Gallinago , Leach, <i>Syst. Cat. Mam. Bds. B. M.</i> , p. 31 (1816)	G. media.
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Bill long, straight and slender, slightly swollen and soft at the tip, about twice the length of the tarsus; nostrils linear ovals, close to the base of the bill in a groove running for about three quarters

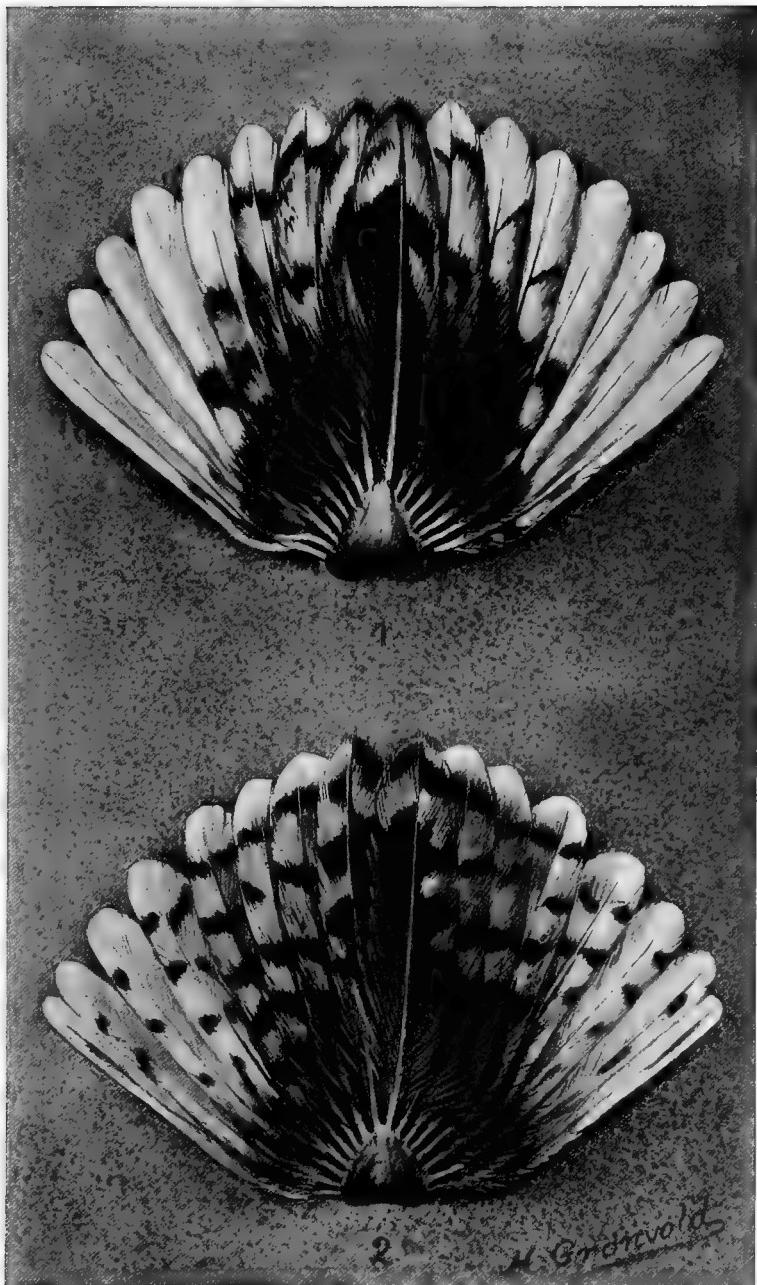


FIG. 132.—Tails of (1) *Gallinago major*, and (2) *Gallinago nigripennis*, from above, to show the difference between the two species. After Seeböhm.

of its length; eye large and placed rather far back so that the ear orifice is just below its hinder edge; wings rather short, first and second quills sub-equal, difference between the longest and shortest primaries about two-thirds the length of the culmen; tail rounded, composed of from twelve to twenty-eight feathers (sixteen in South African species), the outer ones usually narrowed; tarsus short, not as long as the middle toe and claw, with transverse scutes before and behind; hind toe present; anterior toes cleft to the base without web; sexes alike, no seasonal change of plumage.

Out of some twenty species of Snipes spread all over the world only two are found in South Africa—one a migrant from the northern hemisphere, and the other a resident.

Key of the Species.

- A. The three outer tail-feathers pure white without spots or bars *G. major*, p. 414.
- B. The three outer tail-feathers white, with obsolete spots or bars *G. nigripennis*, p. 416.

751. *Gallinago major. Double Snipe.*

Scolopax major, *Gmel. Syst. Nat.* i, p. 661 (1788); *Seebohm, Geogr. Distr. Charadr.* p. 482, with fig. of tail (1898).

Gallinago major, *Gurney, Ibis*, 1861, p. 134, 1864, p. 360, 1868, p. 261 [Natal]; *id. in Andersson's B. Damaral.* p. 312 (1872); *Ayres, Ibis*, 1873, p. 283, 1877, p. 351, 1878, p. 411, 1880, p. 268, 1885, p. 348, 1886, p. 293; *Dresser, B. Eur.* viii, p. 631, pl. 541 (1876); *Sharpe, ed. Layard's B. S. Afr.* p. 678 (1884); *id. Cat. B. M.* xxiv, p. 626 (1896); *Woodward Bros., Natal B.* p. 188 (1899).

Gallinago media,* *Shelley, B. Afr.* i, p. 192 (1896); *Reichenow, Vög. Afr.* i, p. 285 (1900).

“Great or Solitary Snipe” of some authors.

Description. Adult Male.—Above mottled black and sandy-buff, the crown black, with a median and two supra-loral and supra-ocular streaks of buff; wing-coverts conspicuously tipped with white; bastard wing, primary coverts and wing-quills black, the two former and the secondaries with white tips; rump and upper tail-coverts sandy-buff, barred with dusky; sixteen tail-feathers, centre ones bright rufous with black bases and a narrow sub-terminal black and a terminal white tip, the white gradually

* Gerini's name “media,” adopted by some authors, is not admissible under the laws of nomenclature.

increasing till the four outer feathers on each side are white, except for a few dark spots towards the bases of the feathers; a dusky loreal streak; beneath the chin and centre of the abdomen are white; the sides of the face and neck, the fore neck and breast sandy-buff, streaked with brown; the flanks and under tail-coverts also sandy-buff but barred with brown; axillaries and under wing-coverts barred with black and white.

Iris dark umber; bill pale yellowish, dusky towards the tip; tarsus and feet light greenish-yellow.

Length about 11·0; wing 5·3; tail 2·0; culmen 2·45; tarsus 1·4; weight 8 oz. (Trevelyan). A female is similar, wing 5·5; culmen 2·4; tarsus 1·37; weight 8 oz. (Ayres.)

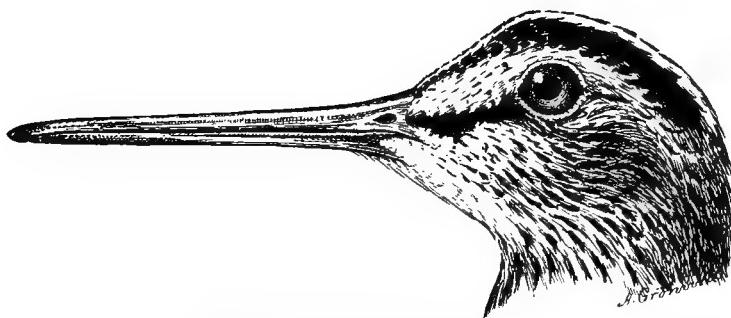


FIG. 133.—Head of *Gallinago major*. $\times \frac{11}{12}$

The breeding plumage is rather brighter than the winter plumage; young birds are more rufous than the adults; the white tips to the wing-coverts are tinged with buff and the white outer tail-feathers are barred with dusky-brown.

Distribution.—The Double Snipe nests in Eastern and North-eastern Europe and Northern Asia from Germany to the Yenesei, while in the British Islands it is only a casual visitor. It passes over South Europe and winters in Africa, where, however, it seems to be confined to the eastern and southern portions of the continent, and has not hitherto been met with in the western tropical districts.

As the present species is frequently confused with the resident Ethiopian Snipe it is difficult to give exact details, but the following are recorded localities, and the bird is probably generally distributed, though by no means so abundant as the other species: Cape Colony

—Cape division (S. A. Mus.), East London in summer (Wood), King William's Town (Trevelyan); Natal—November (Brit. Mus.); Transvaal—Potchefstroom, September to April (Ayres); Bechuanaland—Tebra country, near Lake Ngami, April (Eriksson); German South-west Africa—Ondonga, February (Andersson).

Habits.—Though few observations have been made on the habits of the Double Snipe in South Africa, it does not seem to differ at all from the Ethiopian Snipe in this respect. Though the majority of birds reach South Africa in September or October, Ayres states that a few individuals may be found at all times of the year. They are found singly or in pairs, seldom in larger numbers, on marshy ground and about swampy vleys, and feed on soft beetles and other insects. Mr. Wood tells me that there are always a few pairs on the mud banks of the tidal rivers in the neighbourhood of East London during the summer (*i.e.*, between October and March).

752. *Gallinago nigripennis*. *Ethiopian Snipe*.

Gallinago nigripennis, *Bp.*, *Icon. Faun. Ital. Ucc.* text to pl. 43 (1832); *Gurney, Ibis*, 1864, p. 355 [Natal]; 1868, p. 51; *Holub & Pelz., Orn. Süd-Afr.* p. 293 (1882); *Shelley, Ibis*, 1882, p. 366 [Mashonaland]; *Sharpe, ed. Layard's B. S. Afr.* p. 676 (1884); *Ayres, Ibis*, 1885, p. 347; *Nicolls and Eglington, Sportsm. S. Afr.* p. 130 (1892); *Sharpe, Cat. B. M.* xxiv, p. 631 (1896); *Shelley, B. Afr.* i, p. 192 (1896); *Woodward Bros., Natal B.* p. 188 (1899); *Marshall, Ibis*, 1900, p. 265; *Reichenow, Vög. Afr.* i, p. 236 (1900); *Haagner, Ibis*, 1902, p. 574; *Oates, Cat. B. Eggs*, ii, pp. 60, 357 pl. ii, fig. 3 (1902); *Sharpe, Ibis*, 1904, p. 11 [Deelfontein].

Gallinago æquatorialis, *Rüpp.*, *Syst. Uebers.* pp. 123, 126 (1845); *Layard, B. S. Afr.* p. 333 (1867); *Gurney, Ibis*, 1868, p. 261; *Ayres, Ibis*, 1869, p. 302, 1878, pp. 301, 411; *Layard, Ibis*, 1869, p. 377; *Buckley, Ibis*, 1874, p. 388; *Barratt, Ibis*, 1876, p. 212; *Butler, Feilden and Reid, Zool.* 1882, p. 425.

Gallinago macrodactyla (*nec Bp.*) *Gurney*, in *Anderson's B. Damara*. p. 312 (1872).

Scolopax æquatorialis, *Seebold, Ibis*, 1886, p. 136, 1887, p. 344; *id. Geogr. Distr. Charadr.* p. 500, with fig. of tail (1888).

“Black-quilled Snipe” of some authors; “Spook-vogel,” of the Dutch; “Kue-kue Lemao” of the Basutos (Murray).

Description. Adult Male.—Closely resembling *G. major*, but darker and more richly coloured, the back having a velvety gloss and the buff a richer tinge; the other distinguishing marks are the much narrower and less conspicuous white tips to the wing-coverts;

the inner secondaries (except the innermost elongated ones) are blackish with white tips and no rufous bars; the three outer tail-feathers are white with clearly marked dusky spots, or bars, on the outer web; finally, the bill is somewhat longer.

Iris dark hazel; bill black; legs brownish-green.

Length about 11·0; wing 5·1; tail 2·6; culmen 2·9; tarsus 1·45. The female resembles the male; wing 4·9; culmen 3·3; tarsus 1·5.

Distribution.—This Snipe is confined to Africa, where it appears to be a resident; its range extends from Abyssinia, through Central Africa and Nyasaland to Cape Colony; it does not appear to have been met with in West Africa, except in Angola, while in Madagascar a peculiar species (*G. macrodactyla*) occurs.

In South Africa the Ethiopian Snipe is widely distributed throughout the country, though rare in Bechuanaland and in German South-west Africa. It is a resident, though probably subject to local movements in search of damp ground.

The following are recorded localities: Cape Colony—Cape division, October, Caledon, February, Albany (S. A. Mus.), Port Elizabeth, rare (Rickard and Brown), East London, rare (Rickard and Wood), King William's Town (Trevelyan), Deelfontein, July (Seimund), near Aliwal North, breeding (Wood); Natal—Isipingo Flats, near Durban (Bt. Mus.), Maritzburg, May (Buckley), Newcastle, April, May, June, September (Butler and Reid); Transvaal—Potchefstroom, breeding, April, July, August, December (Ayres); Linokana, in Zeerust, July (Holub), Johannesburg (Ross); Rhodesia—near Salisbury (Marshall); Damaraland (Andersson, in Bt. Mus.).

Habits.—The Ethiopian Snipe is generally distributed over South Africa, where there is suitable ground; they move about from place to place as the swamps and vleis gradually dry up; they lie more closely and fly more slowly than the English Snipe, and are therefore not nearly so difficult to shoot. Their food consists of worms and aquatic insects, which they obtain by boring in the damp ground with their long bills, while pebbles and small stones as well are usually found in their stomachs to aid, doubtless, in the process of digestion. Snipes are somewhat nocturnal in their habits, and during the breeding season the cocks perform a series of curious evolutions in the air, rising, and then descending again, at the same time making a curious loud vibrating, rushing sound, compared by Ayres to the neighing of a horse. The same sound is made by the English Snipe (*G. celestis*), and is usually known as "drumming."

The cause of this remarkable noise is obscure, but it is probably made by the vibration of the webs of the outer tail-feathers as they are rapidly drawn through the air. It is generally believed that only the male "drums," but Ayres states that he shot a female bird in mid-air while making a similar sound.

Ayres found this bird breeding in the swamps near Potchef-stroom in August, and on one particular occasion as late as April. The nests are placed and formed in a tussock of grass, the centre of which the bird treads well down, while the outer blades form a shelter from the sun and cold winds. The eggs are an olive-buff colour spotted and blotched, chiefly the obtuse end, with two or three shades of dark brown; they have a fair amount of gloss, and measure about $1\cdot75 \times 1\cdot25$; the number in a clutch does not seem to have been noticed.

Genus II. ROSTRATULA.

Type.

Rostratula, Vieill., Analyse, p. 56 (1816) *R. capensis*.

Bill long and slender but not so long as in *Gallinago*, hardly exceeding the tarsus in length; not pitted at the end and with the tip slightly decurved; nostrils as in *Gallinago*, wings rather short and rounded, the first and second primaries sub-equal and the longest; tails square, of ten feathers, outer feathers not narrowed; tarsus moderate, about equal to the middle toe and claw; hind toe present, anterior toes without webs.

The Painted Snipes are not migratory, and have a curious distribution, one being found in South America, one in Australia, while the third is common to Africa and India.

753. **Rostratula capensis.** *Painted Snipe.*

Scolopax capensis, Linn., Syst. Nat. 12th ed. i, p. 247 (1766).

Rhynchtea capensis, Grill, K. Vet. Akad. Handl. ii. no. 10, p. 53 (1858) [Oudtshoorn]; *Gurney, Ibis*, 1863, p. 330 [Natal]; *Layard, B. S. Afr.* p. 334 (1867); *Shelley, B. Egypt*, p. 250, pl. 11 (1872); *Gurney, in Andersson's B. Damaral.* p. 313 (1872); *Barratt, Ibis*, 1876, p. 212; *Ayres, Ibis*, 1877, p. 351; *Wood Mason, P. Z. S.* 1878, p. 745, pl. 47 [trachea]; *Shelley, Ibis*, 1882, p. 366 [Shangani River]; *Holub & Pelzeln, Orn. Süd-Afr.* p. 294 (1882); *Butler, Feilden and Reid, Zool.* 1882, p. 425; *Sharpe, ed. Layard's B. S. Afr.* pp. 679, 855 (1884);

Seeböhm, Geogr. Distr. Charadr. p. 456 (1888); *Nicolls and Eglington, Sportsm. S. Afr.* p. 130 (1892); *Fleck, Journ. Ornith.* 1894, p. 383; *Shelley, B. Afr.* i, p. 193 (1896); *Rendall, Ibis*, 1896, p. 176; *Alexander, Ibis*, 1900, p. 455.

Rostratula capensis, Sharpe, Cat. B. M. xxiv, p. 683 (1896); *Woodward Bros., Natal B.* p. 189 (1899); *Marshall, Ibis*, 1900, p. 265; *Oates, Cat. B. Eggs* ii, p. 68 (1902).

Rostratula bengalensis, Reichenow, Vög. Afr. i, p. 237 (1900).

“Golden Snipe” of some authors.

Description. Adult Male.—Crown and mantle dark ashy-grey, slightly vermiculated with darker; a median line of buff along the crown bordered by a shade of blackish; wing-coverts bronzy-yellow, with incomplete black-edged spots of paler yellow; the scapulars and inner secondaries ashy, mottled with transverse spots of bronzy-green, bordered by white and a longitudinal line of buffy-yellow; wing quills pale ashy-grey, with conspicuous spots of buff and a certain amount of black along the outer webs of the primaries; inner primaries and secondaries barred and spotted with black and white; rump, upper tail-coverts and tail ashy, finely barred with black and spotted with buff; round the eye and extending back over the ear-coverts a circle of white, below which is a darker band; chin whitish, becoming ashy-brown on the sides of the face and neck and ending in an ill-defined cross band of black across the upper breast; rest of the lower surface white, except for a mottled black patch on either side of the lower breast.

Iris dark brown; bill purplish-brown; legs and feet dull slaty-blue.

Length about 9·75; wing 4·8; tail 1·4; culmen 1·65; tarsus 1·55.

The female differs from the male, and is, on the whole, more richly coloured; the back and scapulars are of a rich bronzy-brown with a metallic green gloss and a few transverse bars greenish-black; parapteral plumes, usually concealed by the scapulars pure white; a longitudinal streak of buff along the inside of the scapulars; wing-coverts bronzy metallic green, transversely barred with blue-green; wing-quills and tail as in the male; lores, neck all round, and fore neck rich chestnut, paling on the chin and throat, bordered below by a broad collar of black across the upper breast; in other respects resembling the male.

Iris brown; bill brown at the base, reddish-brown towards the tip; legs olive-green.

Length (in flesh) 9·5; wing 5·5; culmen 1·9; tarsus 1·7.

The young birds are like the male; the young female has, however, the white parapteral plumes not developed in the other sex.

Distribution.—The Painted Snipe is found throughout Africa, south of the Sahara, including the island of Madagascar; its range extends further through Egypt and Southern Asia, including India, to China and Japan, the Philippines, Borneo and Java. It appears to be a resident throughout its range.

In South Africa, although nowhere very abundant, it is widely spread over all the colonies and territories, as shown in the following list of the recorded localities: Cape Colony—Cape division, November, February (S. A. Mus.), Port Elizabeth, scarce (Brown), East London, rare (Rickard), King William's Town, rare (Trevelyan), Oudtshoorn, February (Victorin), Orange River, near Upington, January (Bradshaw), Aliwal North (Wood), Lady Grey, breeding January (Lawrence); Natal—Umlazi River mouth (Ayres), Maritzburg (Fitzsimmons), Newcastle district, July to November (Reid); Transvaal—Potchefstroom (Barratt and Ayres), near Barberton (Rendall); Bechuanaland—Selenia Pan, December (Ayres), Soshong, January (Holub), Nocana, July (Fleck); Rhodesia—Shangani River, November (Ayres), Tamaopha (Holub), near Salisbury rare (Marshall); German South-west Africa—Otjimbinque, November, Swakop and Ondonga, December (Andersson), Omaruru, November (Eriksson); Zambezi, December (Alexander).

Habits.—As shown by its rounded wings and short secondaries the Painted Snipe is essentially a bird of limited migratory powers. In fact, it seems formed merely to move about comparatively short distances in search of damp ground. It is a shy and skulking bird, usually hiding in reeds and thick vegetation on the borders of swamps and vleis, resembling in this respect a Water Rail rather than a Snipe; its flight is low and heavy, and is usually for a short distance only, when it alights again; it feeds towards dusk coming out on the mud-flats in search of insects, and its flesh is very palatable.

The most interesting thing about the Painted Snipe, however, is the relation of the sexes, which appear to be reversed from what ordinarily holds good among birds; the adult female is larger and more brilliantly coloured than the male, while the young female resembles him. The female has a croaking, guttural note, while that of the male is shriller, this being due to the construction of the trachea, or windpipe, which in the female is convoluted and modified, while that of the male is straight and simple (see Wood Mason, l. c.).

Moreover, it is believed that the male undertakes the duty of incubation, though I have not met with any definite statement in regard to this matter, so far as South African birds are concerned.

Layard found this bird breeding in marshy ground close to Cape Town, and describes the eggs as like those of the Ethiopian Snipe but with yellower ground and with more defined, darker markings all of one shade. Andersson found it breeding near Ondonga, in Damaraland ; he states that it makes no nest, but that the eggs, three or four in number are laid near water. Oates gives the dimensions as $1\cdot5$ to $1\cdot29 \times 1\cdot05 \times 0\cdot89$.

Mr. Lawrence informs me that this Snipe breeds in Lady Grey, in the north-east of the Colony in January, making no nest, but depositing its eggs, four to five in number, among stones or on gravel.

There are no eggs of this species in the South African Museum, nor does the bird, so far as I am aware, still breed close to Cape Town.

Order XVII. GAVIÆ.

The members of this order, which includes the Gulls, Terns, Skimmers and Skuas, are undoubtedly closely allied to the *Limicolæ*, from which indeed they can hardly be separated, so far as anatomical characters are concerned.

They are all birds of moderate size with moderate-sized bills and long wings bearing eleven primaries, the first being minute ; the rectrices are twelve in number and the feet have the three front toes webbed, generally completely ; a small hind toe not connected with the others and jointed at a higher level than the others, is generally present.

The skull is schizognathous and schizorbinal ; there are no basipterygoid processes ; cervical vertebræ fifteen in number ; the fifth cubital remex absent and the contour feathers with an aftershift ; oil gland tufted ; two carotids ; cæca present, but very small in some families.

There is a good deal of disagreement among authors as to the classification of this order ; perhaps the simplest and most satisfactory solution is to divide it into four families, containing the Gulls, Terns, Skimmers and Skuas respectively, though the distinctions between the first two are not of such importance as those between the others.

Key of the Genera.

- A. Bill without a horny cere.
- a. Bill long, straight and rather slender, both mandibles approximately equal.
 - a¹.* Tail short and nearly square; webs between the toes emarginate *Hydrochelidon*, p. 429.
 - b¹.* Tail distinctly forked, outer feathers more or less elongate and pointed; toes fully webbed..... *Sterna*, p. 438.
 - c¹.* Tail graduated, the outer pair of tail-feathers distinctly shorter than the next pair.
 - a².* Bill strong and decurved; fourth pair of rectrices the longest *Anous*, p. 445.
 - b².* Bill slender and long; third pair of rectrices the longest *Micranous*, p. 446.
 - c².* Bill stout at the base, culmen straight or upcurved; second pair of rectrices the longest..... *Gygis*, p. 447.
 - b.* Bill with both mandibles much compressed, the lower exceeding the upper in length
 - c.* Bill stout, not exceeding the head in length; upper mandible somewhat longer than the lower, tip hooked and bent down over that of the lower..... *Rhynchos*, p. 448.
 - B. Bill with a horny cere overhanging and partially concealing the nostrils *Larus*, p. 422.
- Stercorarius*, p. 451.

Family I. LARIDÆ.

Sternum with two notches on each side posteriorly; femoro-caudal, accessory femoro-caudal, accessory semitendinosus and ambiens muscles all present; cæca small and rudimentary.

The external characteristics are given in the description of the single genus *Larus* represented in our fauna.

Genus I. LARUS.

Type.

Larus, Linn. *Syst. Nat.* 12th ed. i, p. 224 (1766)..... *L. marinus*.

Bill stout and hooked, the upper mandible slightly longer than the lower one and bent down over its tip; bill shorter than the head and about three times as long as deep; no cere at the base of the bill; nostrils linear ovals about half way down the bill; wings

strong but not so long as in *Sterna*, reaching to about the end of the tail; first primary the longest; tail square or nearly so; lower third of the tibia bare like the tarsus, the latter strong and usually longer than the middle toe and claw with transverse scutes in front; front toes fully webbed, hind toe small and rudimentary.

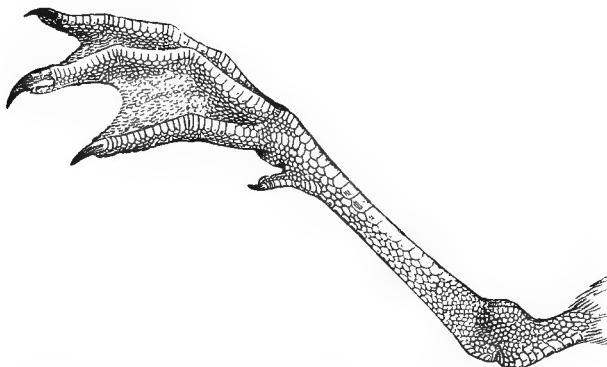


FIG. 131.—Right foot of *Larus hartlaubi*, from inside. $\times \frac{1}{4}$

This is a large genus containing, according to Saunders, some forty-four species of Gulls, spread over the greater part of the world, except the Central Pacific. South Africa, however, is not well off for Gulls, possessing representatives of only three species.

Key of the Species.

- A. Largest, wing about 17; back slaty-black, head white..... *L. dominicanus*, p. 423.
- B. Intermediate, wing about 13; back lavender-grey; a lavender-grey hood in the breeding dress *L. cirrhocephalus*, p. 427.
- C. Smaller, wing about 11; back lavender-grey; head always white *L. hartlaubi*, p. 425.

754. *Larus dominicanus*. *Southern Black-backed Gull.*

Larus dominicanus, *Licht., Verz. Doubl.* p. 82 (1823); *Layard, B. S. Afr.* p. 367 (1867); *Buller, B. New Zeal.* p. 270, pl. 28, fig. 1 (1873); *Sharpe, ed. Layard's B. S. Afr.* p. 697 (1884); *Swinburne P. R. Phys. Soc. Edin.* ix, p. 200 (1886); *Fleck, Journ. Ornith.* 1894, p. 379; *Saunders, Cat. B. M.* xxv, p. 245 (1896); *Shelley, B. Afr.* i,

- p. 165 (1896); *Reichenow, Vög. Afr.* i, p. 41 (1900); *Vanhöffen Journ. Ornith.* 1901, p. 309; *Oates, Cat. B. Eggs*, i, p. 212 (1901).
Dominicanus vetula, *Bruch. Journ. Ornith.* 1853, p. 100.
Larus sp. *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 57 (1858).
Larus vetula, *Gurney, in Andersson's B. Danmaral.* p. 357 (1872);
Shelley, Ibis, 1875 p. 86.

Description. *Adult Male.*—Head and neck all round, rump, tail and underparts throughout white; mantle and wings slaty-black; primary quills black, the first with a white subterminal marking and tip, the others, secondaries and scapulars with white tips only; in very old birds the subterminal white marking fuses with the white tip of the first primary, and there is a subterminal marking on the second quill.

Iris greyish with a narrow red rim of skin round the eyeball; bill yellow with an orange-red patch at the tip of the lower mandible; legs bluish yellow.

Length about 24·0; wing 17·0; tail 6·75; culmen 2·6; tarsus 2·7. The female resembles the male but usually has a somewhat smaller bill.

Young birds are white thickly mottled with brown above and below, the brown mottling tending to form bars on the upper and under tail-coverts; the wing and tail-quills are nearly uniform brown: iris dark hazel; bill dark brown; legs brown. Later on the mantle becomes slaty, the rump and tail-coverts white and the streaks of brown disappear from the head and underparts, but the tail and wing-quills remain a uniform brown for some time; probably the adult plumage is not attained till at least the third year.

Distribution.—The Southern Black-backed Gull is spread over the seas and islands of the great Southern Ocean including the coasts of temperate South America, South Africa and New Zealand. Along our coasts it has been recorded from Walvisch Bay to Durban and is common everywhere. It is exceedingly abundant in Table Bay and False Bays, where it can be seen at all times of the year. I have not heard of its occurrence north of Durban, where it appears to be less common than on the coasts of the Colony.

Habits.—The Southern Black-backed Gull only differs from its northern relative, the Black-backed Gull of the British seas, in its slightly smaller size and darker coloration. It is very common in Table Bay where it picks up a good living from the garbage thrown overboard from the numerous ships lying at anchor there; it is an undiscriminating and voracious feeder, congregating round the dead

bodies of Whales or Seals and also picking up worms, insects and shell fish from the beach; it is said to carry off the eggs of other sea birds such as Gannets and Penguins to distant rocks, where it devours them at leisure.

This Gull has a loud and melancholy call heard generally in early morning when flying round; during the day time it can frequently be seen standing motionless on the sandy beach for hours at a time.

The Southern Black-backed Gull breeds on the islands off the north-western and southern coasts. Its nest is formed on the sandy beach as a rule and contains from two to three eggs; these vary considerably in colour and markings but are usually pale green with a more or less pronounced tinge of brown moderately spotted and blotched with very dark brown and with underlying spots of pale purplish-brown; they measure on an average 2·70 × 2·0.

There are eggs in the South African Museum taken by myself on Dyer's Island off the coast of the Caledon district, on December 3, but the birds mostly breed in November.

755. *Larus hartlaubi*. *Hartlaub's Gull*.

Gavia hartlaubi, Bruch. *Journ. Ornith.* 1853, p. 102.

Larus pojoccephalus, (nec Swains.) Layard, *B. S. Afr.* p. 368 (1867).

Larus hartlaubi, Saunders, *P. Z. S.* 1874, p. 293, 1878, p. 188, fig. 5; Sharpe, ed. Layard's *B. S. Afr.* p. 698 (1884); Swinburne, *P. R. Phys. Soc. Edin.* ix, p. 200 (1886); Saunders, *Cat. B. M.* xxv, p. 240 (1896); Shelley, *B. Afr.* i, p. 165 (1896); W. L. Sclater, *Ibis*, 1896, p. 521; Reichenow, *Vög. Afr.* i, p. 45 (1900); Oates, *Cat. B. Eggs*, i, p. 211, pl. xvii, fig. 2 (1901).

Description. *Adult Female*.—Head and neck all round, whole of the underparts and tail white; mantle and wings lavender grey; first two primaries black with the usual subterminal white marking, the third to fifth with the basal halves white, seventh uniform grey fringed with smoky on the inner web, under wing-coverts uniform smoke grey.

Iris white to light brown; eyelids red; bill and feet red.

Length 15; wing 10·75; tail 4·0; culmen 1·25; tarsus 1·70. Young birds have no subterminal white markings on the outer primaries; all the primaries except the first are distinctly tipped with white and the mantle and wings are mottled with brown;

the seventh primary is barred with black or has a black spot on the outer web.

In breeding dress this species has a faint narrow ring of lavender round the neck but the head remains white.

Distribution.—Hartlaub's Gull is very common in Table Bay and along the west coast of the colony, extending as far north as Angra Pequeña in German South-west Africa. Though it has not been noticed by any observer elsewhere along the south coast of the Colony (Mr. J. G. Brown tells me he has never seen it in Algoa Bay) there is a specimen from Natal obtained by Feilden in the British Museum and it is also stated to be found on the "Madagascar Coasts." This species has been constantly confused with the Grey-headed Gull

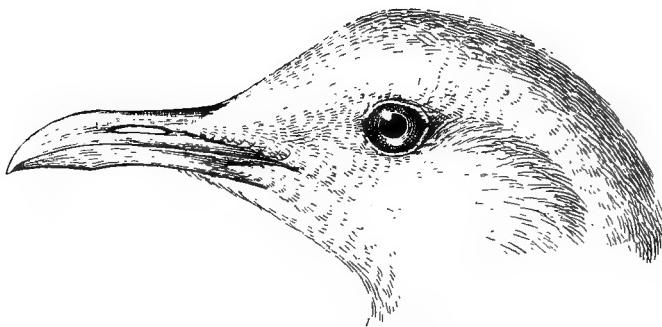


FIG. 135.—Head of *Larus hartlaubi*. $\times \frac{1}{2}$

and it is therefore difficult to make an authoritative statement on the subject, but my impression is that the present species is not found much further east than Cape Agulhas. The South African Museum contains examples from Table Bay obtained in February, June, August and December and from Saldanha Bay dated September, October; all these have pure white heads; another example from Table Bay not dated, and a specimen obtained at Port Nolloth in September for the British Museum by Mr. Grant, have a distinct lavender ring around the neck; this I take to be the breeding dress of the species.

Habits.—Hartlaub's Gull breeds on some of the islands in Saldanha and St. Helena Bays on the west coast of the Colony in very large numbers. The eggs are very variable, passing from greenish stone to buff with markings of purplish or yellowish-brown

and pale purple somewhat evenly and densely distributed over the whole surface. They measure about $2\cdot19 \times 1\cdot42$ according to Oates.

756. *Larus cirrhocephalus*. *Grey-headed Gull*.

- Larus cirrhocephalus*, *Vicill. N. Dict. d'Hist. Nat.* xxi, p. 502 (1818) ; *Saunders, Cat. B. M.* xxv, p. 198 (1896) ; *Shelley, B. Afr.* i, p. 165 (1896) ; *Alexander, Ibis*, 1900, p. 442 ; *Reichenow, Vög. Afr.* i, p. 44 (1900).
Larus pojoccephalus, *Swains. B. W. Afr.* ii, p. 245, pl. 29 (1837) ; *Gurney, Ibis*, 1860, p. 221 ; *Layard, B. S. Afr.* p. 368 (1867) [in part] ; *Fleck, Journ. Ornith.* 1894, p. 379.
Larus phœocephalus, *Saunders, P. Z. S.* 1874, p. 292, 1878, p. 204 ; *Sharpe, ed. Layard's B. S. Afr.* p. 698 (1884).
Cirrhocephalus pojoccephalus, *Gurney, in Andersson's B. Damaral.* p. 358 (1872).
Larus poliocephalus, *Holub & Pelzeln, Orn. Süd-Afr.* p. 332 (1882).

Description. *Adult Male in breeding dress.*—Head all round, sides of the face and throat lavender-grey, darkest at its junction with the pure white neck, where there is a marked line of distinction between the two colours ; mantle and wings like the head but a little darker ; two or three outer primaries black with white subterminal marks ; third to fifth with a good deal of white on their basal halves, sixth and others with a considerable quantity of grey, which replaces the white, and gradually takes up the whole feather, seventh with a subterminal black bar throughout life ; tail-coverts, tail and the whole of the lower surface white, a delicate roseate tint, which rapidly fades after death, pervading the whole of the lower surface.

Iris yellowish-white ; bill and legs crimson to lake-red.

Length about 16 ; wing 13 ; tail 5·0 ; culmen 1·8 ; tarsus 2·0.

The female is slightly smaller ; the adult in non-breeding dress has the head white all round for a short time at least ; the young bird has a white head with darker circular patches, the mantle and wings are somewhat mottled with ashy-brown ; the primaries are as in the adult, but the first two or three have no white subterminal marks ; bill yellowish, blackish at the tip ; legs deep brown.

Distribution.—The Grey-headed Gull is found over a considerable portion of South America from Brazil to the Argentine, and across to the coast of Peru. In Africa the same bird ranges from

Senegambia to Cape Colony, and is found also on nearly all the great lakes of the interior, including the Victoria and Albert Edward Nyanzas, Tanganyika, Shirwa and Naivascha.

In South Africa the Grey-headed Gull has hitherto been met with only on inland waters except at Walvisch Bay and on the east coast from Durban northwards. It does not appear to occur in Table Bay or along the west or south coasts of the Colony.

The following are recorded localities : Cape Colony—Zoetendals Vlei in Bredasdorp, November (Layard), Colesberg (Arnot); Natal—Durban harbour, December (Bt. Mus. and Ayres), Umfolosi River mouth in Zululand (Watson); Transvaal—Lake Chrissie in Ermelo district, January (Albany Mus.); German South-west Africa—Lake Ngami, May, common (Chapman), Walvisch Bay, October, rare (Andersson); Rhodesia—Zambesi above Victoria Falls (W. L. Sclater); Portuguese East Africa—Senna, July, Delagoa Bay and Inhambane (Alexander).

Habits.—The Grey-headed Gull appears to be a more inland species than Hartlaub's or the Southern Black-backed Gulls; it does not, so far as I am aware, occur in Table Bay or along the coast of the Colony, though occasionally found inland. Ayres states that it can frequently be seen in Durban Harbour, where it often alights on stakes in the water. Layard, who obtained examples of this species with full grey hoods in Zoetendals Vlei in November, found broken eggs which he believed to belong to this species, floating on the water; these were greenish-brown profusely spotted with purple and brown, and measure about $2\cdot1 \times 1\cdot5$. Neumann found a breeding colony of this Gull on a little island in Victoria Nyanza; he states that the eggs, generally two or three in number, were laid among the vegetation without any nest, and that in June, when he made his visit, there were few freshly-laid eggs and a good many already hatched.

Family II. STERNIDÆ.

Bill straight, somewhat slender and without cere; the two mandibles of approximately equal length; tail generally long and distinctly forked; legs small; cæca rudimentary; all five Garrodian thigh muscles present (except *Gygis*).

Genus I. HYDROCHELIDON.

Type.

Hydrochelidon, Boie, *Isis*, 1822, p. 563 *H. nigra*.

Bill nearly straight and somewhat compressed, about as long as the head, culmen slightly curved, both mandibles equal; wings long and pointed, extending far beyond the tail, the first primary the longest; tail short, less than half the length of the wing, but very

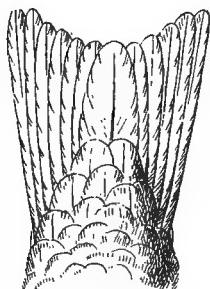


FIG. 136.—Tail of *Hydrochelidon hybrida*. $\times \frac{1}{2}$

slightly forked; legs feeble, webs much indented, so that the toes appear to be only half webbed; lower surface of the body always black or dark grey in the breeding plumage.

This is a genus of marsh-haunting Terns spread over the greater part of the world; only four species are generally recognised, two of which are migrants to South Africa from the northern Hemisphere.

Key of the Species.

- A. Upper tail-coverts and tail white.
 - a. Underparts, including the axillaries, black *H. leucoptera*, p. 431.
 - b. Underparts, including the axillaries, white *H. leucoptera hieme*, p. 431.
- B. Upper tail-coverts and tail grey like the back
 - a. Underparts dark slate, axillaries white ... *H. hybrida*, p. 430.
 - b. Underparts white *H. hybrida hieme*, p. 430.
- C. Upper tail-coverts white, tail grey..... *H. leucoptera, juv.* p. 431.

757. *Hydrochelidon hybrida*. Whiskered Tern.

Sterna hybrida, Pallas, *Zoogr. Rosso-Asiat.* ii, p. 338 (1811).

Pelodes hybrida, Gurney, in Andersson's *B. Damaral.* p. 362 (1872).

Hydrochelidon hybrida, Dresser, *B. Eur.* viii, p. 315, pls. 588-9 (1877); Sharpe, ed. Layard's *B. S. Afr.* p. 699 (1884); Symonds, *Ibis*, 1887, p. 335; Saunders, *Cat. B. M.* xxv, p. 10 (1896); Shelley, *B. Afr.* i. p. 162 (1896); Reichenow, *Vög. Afr.* i, p. 72 (1900); Haagner, *Ibis*, 1902, p. 574.

Hydrochelidon leucopareia, Holub & Pelz. *Orn. Süd-Afr.* p. 332 (1882).

Description. Adult Male in breeding plumage.—Forehead, crown and nape black; sides of the face from the gape below the eye to the nape white; rest of the upper plumage slaty-grey, darkest on the primary quills; outer primaries with the inner webs white to a considerable extent; outer web of the outer tail-feathers also white; beneath the chin is white gradually darkening to black on the abdomen and flanks; vent, under tail-coverts and under wing-coverts white.

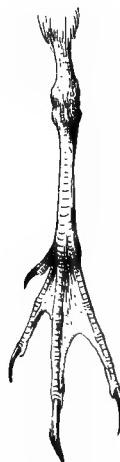


FIG. 137.—Left foot of *Hydrochelidon hybrida*, from above. $\times \frac{1}{2}$

Iris brown; bill blood-red; feet vermillion; webs much indented but not quite so strongly as in *H. leucoptera*.

Length about 10·0; wing 9·5; tail 3·25; culmen 1·2; tarsus .95.

The sexes are alike; in non-breeding plumage the forehead is white, the crown and nape mottled and streaked with black, the

underparts white throughout, and the bill and legs reddish-brown. Young birds are like the adults in non-breeding plumage, but the feathers of the back and secondaries are edged with brown.

Distribution.—The Whiskered Tern breeds in southern and central Europe and Asia from Spain to China; during the northern winter it migrates southwards to Australia and east and southern Africa.

Though seldom noted it appears to be widely spread over South Africa, as the following list of recorded localities shows: Cape Colony—Berg River (Layard), Port Elizabeth, occasionally (J. G. Brown), Vaal river near Douglas, March (Miss Orpen in S. A. Mus.); Orange River Colony—Kroonstad in December (Symonds), Vrededorf Road (B. Hamilton); Natal—Newcastle (Bt. Mus.); Transvaal—near Johannesburg (Haagner); Bechuanaland—Lake Ngami (Andersson); Rhodesia—Pandamatenga, December (Bradshaw); German South-west Africa—Ondonga, February to April (Andersson), Oquamba in Ovampoland (Eriksson).

Habits.—The Whiskered Tern frequents lakes and marshes, where it can be seen skimming over the surface of the water in search of insects, which form its chief food. It has not been noticed breeding in South Africa, though the example obtained by Mr. Layard on the Berg River, and another near Kroonstad by Mr. Symonds are both in breeding plumage. In northern latitudes this Tern breeds in colonies amongst rushes or on floating water-plants in large marshy lakes. The eggs, usually three in number, are pale olive or greenish, doubly spotted with purplish-grey and brown and measure about 1·51 × 1·09.

758. *Hydrochelidon leucoptera*. White-winged Black Tern.

Sterna leucoptera, Meisner & Schinz, *Vög. Schweiz*, p. 264 (1815); Ayres, *Ibis*, 1871, p. 267; Buckley, *Ibis*, 1874, p. 391.

Sterna fissipes, Ayres, *Ibis*, 1871, p. 267.

Sterna nigra (nec Linn.) Gurney, in Andersson's *B. Dammaral*, p. 363 (1872).

Hydrochelidon leucoptera, Dresser, *B. Eur.* viii, p. 321, pls. 590-1 (1875); Ayres, *Ibis*, 1878, p. 411; Sharpe, ed. Layard's *B. S. Afr.* p. 700 (1884); Symonds, *Ibis*, 1887, p. 335; Saunders, *Cat. B. M.* xxv, p. 6 (1896); Shelley, *B. Afr.* i, p. 162 (1896); Alexander, *Ibis*, 1900, p. 442; Reichenow, *Vög. Afr.* i, p. 71 (1900).

Description. *Adult in breeding plumage.*—Head all round, back and rump, underparts as far as the vent, flanks, axillaries and under wing-coverts black; coverts along the carpal joint white, becoming slaty on the other coverts and quills; the four outer primaries sooty-black on the outer webs, with a white streak down the middle of the inner web, shafts white; upper and under tail-coverts, vent and tail white; bill livid-red; feet orange-red; web between the toes strongly indented.

Length about 8·5; wing 7·75; tail 2·5; culmen .95; tarsus .75.

The sexes are alike; in non-breeding plumage the crown of the head and nape are white mottled with black, while the underparts and axillaries are pure white; bill black. Young birds are somewhat similar to the adults in non-breeding plumage, but the upper tail-coverts are always white, though the tail itself is grey.

Distribution—The White-winged Black Tern is found, throughout the northern summer, in Central and Southern Europe and Central Asia as far as China; during the northern winter it migrates southwards to Australia, New Zealand and Africa.

In Africa it has chiefly been met with in the east and south, having been recorded from most of the larger lakes such as Albert Edward and Tanganyika. Beyond an example in the British Museum stated to have been obtained by Mr. Layard, I know of no other notice of its occurrence in the Colony proper, but it appears to become more abundant further north.

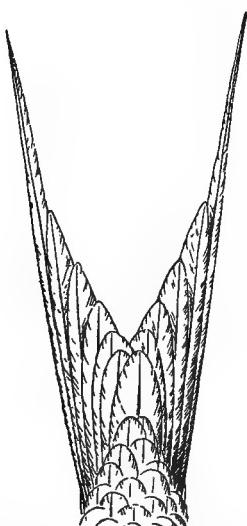
The following are the recorded localities: Orange River Colony—Kroonstad, December (Symonds); Transvaal—Potchefstroom, June, July and November (Ayres); Bechuanaland (S. A. Mus.); German South-west Africa—Omanbonde (Andersson in Bt. Mus.); Portuguese East Africa—Chicowa September and Zumbo, November on the Zambezi (Alexander).

Habits.—This 'Tern is generally seen in considerable flocks hawking for insects, on which it chiefly subsists, over marshes and lagoons and even on temporary rain pools; its flight is somewhat slow, uncertain and heavy. Andersson states that it feeds on frogs' spawn and snails as well as insects. Alexander saw large flocks passing down the Zambezi presumably on migration during the months of November, December and January. They were in winter dress. It is not probable that this bird will be found breeding in South Africa.

Genus II. STERNA.

*Type.**Sterna*, *Linn. Syst. Nat.* 12th ed. i, p. 227 (1766) ... *S. hirundo*.

Bill long, pointed, and somewhat compressed, both mandibles of equal length; nostrils elongated ovals in the basal half of the bill; wings very long and pointed, first primary the longest; tail more or less forked, the outer feathers elongated, attenuated and pointed sometimes to a very considerable extent; tarsus short, less than the middle toe and claws; toes fully webbed.

FIG. 138.—Tail of *Sterna vittata*. $\times \frac{2}{3}$

Saunders recognises thirty-three species of this genus, twelve of which may be considered South African, while the Caspian Tern makes another addition to both numbers if it is, as here, included in the same genus. The Terns are of world wide distribution and are found both at sea and also on inland waters; though apparently well adapted to do so, they are seldom seen swimming.

Key of the Species.

- A. Tail very short, less than one third of the wing;
of large size, wing over 14; nape feathers not
narrowed and pointed *S. caspia*, p. 434.

B. Tail longer, at least half the length of the wing.

- a.* Of large size, wing over 14·0; forehead white (in breeding dress); a crest of elongate feathers on the nape *S. bergii*, p. 436.
- b.* Of intermediate size, wing between 8 and 13 inches.
 - a¹.* A nape crest; legs black, mantle grey.
 - a².* Bill black, yellowish at the tip
 - a³.* Bill yellow..... *S. cantiaca*, p. 437.
 - b¹.* No nape crest, legs red to livid, mantle grey.
 - a².* Inner web of primaries edged with white to the tips of the feathers..... *S. dougalli*, p. 439.
 - b².* Inner web of primaries edged with white, not extending to the tip of the feathers.
 - a³.* Outer web of streamers very slightly grey
 - b³.* Outer web of streamers distinctly grey.
 - a⁴.* Dark band on the inner web along the shaft of the primaries broader, occupying about half the web
 - b⁴.* Dark band on the inner web along the shaft of the primaries narrower, occupying only about a quarter the width of the web..... *S. vittata*, p. 439.
- c¹.* No nape crest, legs blackish, mantle sooty black..... *S. fluvialis*, p. 440.
- c.* Of small size; wing less than 8·0.
 - a¹.* Forehead black to the base of the bill; bill black
 - b¹.* Forehead white.
 - a².* Only the two outer primaries darker than the inner ones..... *S. macrura*, p. 442.
 - b².* The three outer primaries darker and contrasting with the inner one
- S. fuliginosa*, p. 444.
- S. balænarum*, p. 442.
- S. minuta*, p. 443.
- S. saundersi*, p. 444.

759. *Sterna caspia*. Caspian Tern.

Sterna caspia, Pall., Nov. Comm. Petrop. xiv, i. p. 582, pl. 22, fig. 2 (1770); Kirk, Ibis, 1864, p. 337; Layard, B. S. Afr. p. 369 (1867); Finsch & Hartlaub, Vög. Ost-Afr. p. 826 (1870); Gurney, in Andersson's B. Dammaral. p. 359 (1872); Dresser, B. Eur. viii, p. 289, pl. 584 (1877); Sharpe, ed. Layard's B. S. Afr. p. 703 (1884); Fleck, Journ. Ornith. 1894, p. 379; Shelley, B. Afr. i. p. 163 (1896); Reichenow, Vög. Afr. i. p. 56 (1900).

Hydroprogne caspia, Saunders, Cat. B. M. xxv, p. 32 (1896).

Description. *Male in breeding plumage.*—Forehead, crown and nape black, rest of the upper surface pale french grey, palest on the rump; primaries at first grey but soon becoming darker and slaty, especially on the inner webs; the white streaks on the inner webs not marked; below pure white.

Iris reddish-brown; bill vermillion-red, sometimes horny towards the tip; feet black.

Length about 22·0; wing 16·0; tail 6·0; depth of the fork 1·20; culmen 3·0; tarsus 1·70.

The female is very similar, but slightly smaller and with a weaker and less brightly coloured bill; in non-breeding plumage the forehead, crown and nape are streaked with white and black, the bill is orange red with a horn-coloured tip. A young bird is like the adult in non-breeding plumage but the orbital patch is darker, and there is a good deal of brownish mottling on the back and wings.

Distribution.—The Caspian Tern is found almost all over the world with the exception of Central and South America and the Islands of the Pacific; it is generally distributed along the coast of Africa and Madagascar and has been noticed on the Nile as high as Khartoum. It is not uncommon on the South African coasts and has been recorded from Walvisch Bay by Andersson and Fleck, from St. Helena Bay, where it was found breeding, by Mr. Kotze, from Table Bay by Layard, from Algoa Bay by Rickard, and where Mr. Brown tells me it is fairly common, and from the mouth of the Zambesi by Kirk; I recently obtained a fine male specimen from Dyer's Island off the coast of the Caledon district, where I was told it bred.

Habits.—This, the largest of all the Terns, is as a rule found singly or in pairs on the south coast, though sometimes it affects large rivers and inland waters; it lives almost exclusively on fish and usually flies with its beak turned downwards at right angles to its body; it has a loud harsh note "Krake kra" to which it gives vent especially when its breeding grounds are disturbed.

Andersson states that when on the wing it usually pursues a steady flight, and at a distance bears considerable resemblance to a Gull; it utters at intervals, especially when fishing, harsh and discordant notes; where not previously disturbed it is not particularly shy or difficult to approach; but when once it knows a gun it becomes exceedingly cunning. This Tern usually deposits its eggs on low sandy islands or shores of the sea making little or no nest.

Kirk found it breeding along with *S. bergii* on a low sandy island at the mouth of the Zambesi in January, while Mr. Kotze sent Mr. Layard an egg taken on an island in St. Helena Bay on the west coast of the Colony. This egg, which is still preserved in the Museum, is a moderate oval and rather rough in texture; it is very pale salmon doubly spotted and blotched with very dark purple and faint grey; it measures $2\cdot5 \times 1\cdot72$

760. *Sterna bergii. Swift Tern.*

Sterna bergii, *Licht., Verz. Doubl.* p. 80 (1823); *Layard, B. S. Afr.* p. 370 (1867); *Finsch & Hartlaub, Vög. Ost-Afr.* p. 828 (1870); *Gurney, in Andersson's B. Damara* p. 360 (1872); *Butler, Feilden and Reid, Zool. 1882*, p. 428; *Sharpe, ed. Layard's B. S. Afr.* p. 704 (1884); *Saunders, Cat. B. M. xxv*, p. 89 (1896); *Shelley, B. Afr. i*, p. 163 (1896); *Reichenow, Vög. Afr. i*, p. 57 (1900).

Sterna velox, *Cretzschm. in Rüpp. Atlas*, p. 21, pl. 13 (1826); *Gurney, Ibis*, 1860, p. 221 [Durban Harbour]; *Kirk, Ibis*, 1864, p. 337; *Gurney, Ibis*, 1868, p. 262.

Sterna galericulata, *Layard, B. S. Afr.* p. 371 (1867); *Gurney, Ibis*, 1868, p. 262.

Description. Adult in breeding plumage.—A broad white band across the forehead; crown and nape black, the nape feathers elongated forming a crest; rest of the upper surface pale pearly grey, paler on the tail; primaries with the usual white band along the inner edge of the inner web; below, including the sides of the face and neck white throughout.

Iris dark brown; bill chrome yellow, often tinged with green towards the bases of the mandibles; legs black, soles mottled with yellow. Length about 19·0; wing 15·0; tail 7·0; depth of the fork 3·0; culmen 2·4; tarsus 1·1.

The sexes are alike; the adult in non-breeding plumage has the crown chiefly white with black mottling, the nape feathers black, but often with white tips and spots.

The young bird has the whole of the head, including the forehead, mottled with white and brown, the mantle is brown, the feathers mostly edged with white; the primaries are dark ashy-brown, the tail-feathers the same, tipped with white; under parts white, sometimes a few streaks of brown on the throat and neck.

Distribution.—The Swift Tern is found along the coasts of the mainland and on the islands of the Indian and Pacific Oceans,

as far as the Hawaiian Islands and Australia, though not reaching New Zealand. Its range extends round the southern extremity of Africa into the Atlantic as far north as Walvisch Bay.

On the South African coasts it is a fairly common bird, though not often observed. The following are recorded localities : Walvisch Bay, November (Andersson), Table Bay, common (Layard), False Bay, October (S. A. Mus.), Port Alfred, July (Albany Museum), East London in summer (Wood), Durban Harbour (Ayres and Butler).

Habits.—This fine Tern is fairly common in Table Bay, where it can be seen through most of the year in small flocks; it feeds chiefly on fish, and can be observed hovering over the water with beak bent vertically downwards on the watch for them; its flight is high and quick, and it has a loud cry.

Mr. Layard states that it breeds on the islands on the west coast, and that it lays two eggs of a rich cream colour, dotted, blotched and streaked with very dark-brown and purple, and measuring 2·48 × 1·58.

Sir John Kirk found this Tern nesting along with the Caspian Tern on some sandy islands at the mouth of the Zambesi. The nests were in a slight hollow in the sand close to the water's edge.

761. *Sterna cantiaca*. *Sandwich Tern*.

Sterna cantiaca, Gmel. *Syst. Nat.* i, p. 606 (1788); Layard, *B. S. Afr.* p. 370 (1867); Gurney, in Andersson's *B. Damal.* p. 361 (1872); Shelley, *Ibis*, 1875, p. 87; Dresser, *B. Eur.* viii, p. 201, pl. 586 (1877); Sharpe, ed. Layard's *B. S. Afr.* p. 702 (1884); Saunders, *Cat. B. M.* xxv, p. 75 (1896); Shelley, *B. Afr.* i, p. 163 (1896); Reichenow, *Vög. Afr.* i, p. 62 (1900).

Description. Adult in non-breeding plumage.—Forehead and crown white, slightly spotted and streaked with black, which becomes predominant on the nape and round the eyes; feathers of the nape elongated and pointed, forming a crest; upper surface pale pearly-grey, becoming paler round the hind neck and on the tail; outer primaries dark, almost black, with a white band along the inner edge of the inner web, not reaching the tips of the feathers; outer tail-feathers white not much elongated; below white throughout.

Iris dark brown, bill black tipped with yellow, legs black.

Length about 16·0; wing 11·5; tail 5·75; depth of the fork 2·25; culmen 2·15; tarsus 1·05.

The sexes are alike: in the breeding plumage the forehead and crown are black and the nape-crest more marked, while the lower surface has an evanescent pink tinge somewhat less pronounced than in *S. dougalli*.

In the young bird the forehead is ash-brown, the crown dull-white, thickly streaked with brownish-black, the upper parts mottled and variegated with black and white and the bill horn coloured.

Distribution.—The Sandwich Tern is found along the eastern coasts of the Atlantic from the Orkneys to Cape Colony and Natal, including the Mediterranean, Black and Caspian Seas. On the west side of the Atlantic it ranges only from New England to the Caribbean Sea, crossing to the Pacific in Guatemala. It is also found in the Red and Arabian Seas.

On the South African coasts it is far from uncommon, but is only a migrant from the winter of the northern hemisphere, and, as a rule, in non-breeding plumage. The following are recorded localities: Walvisch Bay October (Andersson), Table Bay, February (Shelley), December, March and May (S. A. Mus.), Algoa Bay (Brown), Port Alfred, December, (Albany Mus.); Natal—Durban, January (Bt. Mus.).

Habits.—Little has been recorded about the Sandwich Tern in South African waters. Andersson found it common at Walvisch Bay, where he states it often associates in large flocks with other Terns. It has a short, harsh cry, generally heard when fishing. Hitherto it has not been known to breed within our limits, and as most of the examples met with are in non-breeding plumage, it seems probable that it is only here as a migrant from the northern hemisphere.

762. *Sterna media*. *Smaller Crested Tern*.

Sterna media, Horsfield, Tr. Linn. Soc. xiii, p. 198 (1820); Saunders, Cat. B. M. xxv, p. 86 (1896); Reichenow, Vög. Afr. i, p. 60 (1900).

Description.—*Adult*.—Resembling *S. cantiaca* but with a darker grey mantle, and rump and tail of much the same colour.

Bill waxy yellow, tarsi and toes black, soles pale yellow. Length 17·0; wing 12·0· tail 6·75; depth of fork 3·0; culmen 2·4; tarsus 1·0.

The young birds and adults in non-breeding plumage go through corresponding series of changes to those of *S. cantiana*.

Distribution.—This Tern is found throughout the Mediterranean and Red Seas and the coasts of the Indian Ocean from Durban to Australia. It appears to be fairly common on the east coast of Africa and Madagascar, but the only definite record of its occurrence within our limits is an example now in the British Museum obtained at Durban by Gordge.

763. *Sterna dougalli*. *Roseate Tern*.

Sterna dougalli, Montagu, *Orn. Dict. Suppl.* (1813); Sharpe, ed. Layard's *B. S. Afr.* p. 702 (1884); Saunders, *Cat. B. M.* xxv, p. 70 (1896); Reichenow, *Vög. Afr.* i, p. 63 (1900).

Description. Adult.—Forehead, head and nape black, neck white, rest of the upper surface pale lavender-grey, primaries a little darker, especially the first; inner webs with white inner borders which extend to the tips of the feathers; tail becoming rather paler, especially the long streamers; below white with a beautiful pink tinge which is very evanescent.

Iris dull brown; bill black, red at the base; feet coral-red; claws black.

Length 14·0; wing 8·9; tail, central feathers 1·70; lateral feathers 2·50; culmen 1·40; tarsus .80.

In winter the forehead is spotted with white, the underparts have no pink tinge and the bill is black.

Distribution.—The Roseate Tern is found along the eastern coasts of the Atlantic and extends through the Indian Ocean as far as New Caledonia, breeding there and on the Andamans. On the west side of the Atlantic it occurs from Massachusetts to the Caribbean Sea.

The evidence of its occurrence in South African waters rests only on the presence of examples in the British Museum from the "Cape of Good Hope" and from "Algoa Bay."

764. *Sterna vittata*. *Kerguelen Tern*.

Sterna vittata, Gmel. *Syst. Nat.* i, p. 609 (1788); Saunders, *Cat. B. M.* xxv, p. 51 (1896); Reichenow, *Vög. Afr.* i, p. 65 (1900).

Description. Adult Male.—Forehead, lores, crown and nape deep black; a band of white from the gape below the eye to the nape; upper surface pale grey; shafts of the primaries white; tail

nearly white, outer webs of the outer feathers very pale grey, so that there is little contrast in shade between the two webs; below grey. Bill and feet cherry-red.

Length about 16; wing 10·5; tail 7·5 to 8·0; depth of fork 4·5 to 5·0; culmen 1·45; tarsus ·7.

In the non-breeding dress the forehead and crown are mottled-grey and black. Young birds are white below and have the outer webs of the tail-feathers greyer; the bill and feet vary from dull livid-red to blackish.

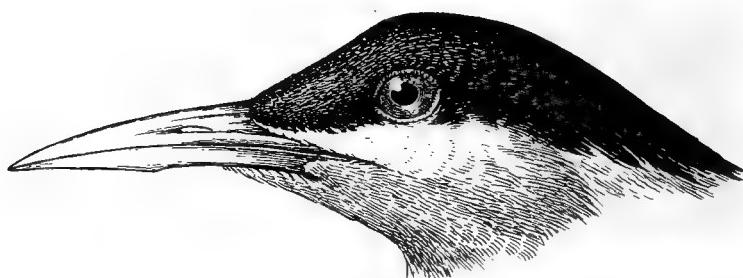


FIG. 139.—Head of *Sterna vittata* in breeding dress. $\times \frac{1}{2}$

Distribution.—This Tern is found throughout the southern portion of the Atlantic and Indian Oceans, from the neighbourhood of Ascension and Tristan da Cunha to Kerguelen and St. Paul; there are examples of this species in the South African Museum, recently identified by Mr. Howard Saunders, obtained in Table Bay in August, near Dassen Island in June, in False Bay in July, and in Saldanha Bay in September; all are in non-breeding plumage. Probably this bird is common enough about the coast of South Africa, but has been hitherto confounded with *S. fluviatilis* and *S. macrura*, both of which it closely resembles.

765. *Sterna fluviatilis*. Common Tern.

Sterna hirundo, Linn. *Syst. Nat.* 12th ed. i, p. 227 (1766) [in part]; Reichenow, *Vög. Afr.* i, p. 64 (1900).

Sterna fluviatilis, Naum. *Isis*, 1819, pp. 1847-8; Gurney, *Ibis*, 1868, p. 263; Sharpe and Dresser, *B. Eur.* viii, p. 263, pl. 580 (1872); Gurney, in Andersson's *B. Damara*, p. 361 (1872); Saunders, *P. Z. S.* 1876, p. 649; Sharpe, ed. Layard's *B. S. Afr.* p. 701 (1884);

Swinburne, Proc. R. Phys. Soc. Edin. ix, p. 200 (1886); *Saunders, Cat. B. M.* xxv, p. 54 (1896).

Sterna dougalli (*nec Mont.*) *Layard, B. S. Afr.* p. 369 (1867).

Description. *Adult Male.*—Forehead, crown, nape and upper lores black; rest of the upper surface pearly-grey, outer primary with a black outer web, a white shaft, outer half (about .25 to .30 in. wide) of the inner web dark ashy, inner half white, the white disappearing some distance from the tip; inner primaries more silvery, with white wedge-shaped marks on the inner webs and dark grey inner margins; rump and tail whitish; the outer webs of the tail-feathers, especially in the case of the streamers darker grey; below including the cheeks white, slightly tinged with pale grey on the breast and abdomen.

Iris dark brown; bill coral-red; legs coral-red.

Length about 13·0; wing 10·5; tail 6·0; depth of fork 3·0; culmen 1·35; tarsus .75; middle toe without claw .65.

The sexes are alike; in non-breeding plumage the forehead and crown are white, more or less mottled with black, the nape retains more black; the colours of the bill and feet are duller.

Distribution.—The Common Tern is found along the coasts and about the inland waters of Europe and temperate Asia and the eastern half of temperate North America; it migrates south to India, Africa and Brazil during the northern winter.

In South Africa the Common Tern has been hitherto met with only along the coast from Walvisch Bay to East London.

The following are recorded localities: Walvisch Bay, October, November (Andersson), Table Bay, all the year round (Layard), Port Elizabeth, common (Brown), East London (Rickard).

Habits.—The Common Tern is fairly abundant about the shores of Table and False Bays, and though generally considered to visit Africa during the northern winter, is, according to Layard, to be found here all the year round. There are, in the South African Museum, examples apparently referable to this species, in non-breeding plumage, obtained in June and July in Table and False Bays when one would have expected all the birds to be breeding in the northern hemisphere, while one procured by Mr. Layard in full breeding plumage has no date attached. However this may be, this species has not been hitherto detected breeding here in South Africa, and until more observations are recorded it is difficult to give a satisfactory account of this bird's movements.

766. *Sterna macrura.* *Arctic Tern.*

Sterna birundo, *Linn. Syst. Nat.* 12th ed. i, p. 227 (1766) [in part]
Sharpe and Dresser, B. Eur. viii, p. 255, pl. 579 (1872).

Sterna macrura, *Naum. Isis*, 1819, p. 1847; *Gurney, Ibis*, 1868, p. 262;
Saunders, P. Z. S. 1876, p. 650; *Butler, Feilden and Reid, Zool.*
 1882, p. 428; *Sharpe, ed. Layard's B. S. Afr.*, p. 701 (1884);
Saunders, Cat. B. M. xxv, p. 62 (1896); *Shelley, B. Afr.* i, p. 163
 (1896); *Reichenow, Vög. Afr.* i, p. 63 (1900); *Shortridge, Ibis*, 1904,
 p. 203.

Sterna brachypus, *Swainson, B. W. Afr.* ii, p. 252 (1837); *Layard,*
B. S. Afr. p. 371 (1867).

Description. *Adult.*—Closely resembling *S. fluvialis*, but easily distinguished by the narrowness of the dark bands on the inner webs of the outer primary; these are only about ·12 to ·15 inch wide instead of ·25 to ·30; as a rule, too, the tarsus is shorter, not exceeding the middle toe without claw, while the reverse is the case with *S. fluvialis*.

Bill blood-red; legs coral-red.

Length about 13·0; wing 10·0; tail 7·0; depth of fork 4·0; tarsus ·65; middle toe without claw ·65.

Distribution.—The Arctic Tern has a more northerly range than the Common Tern; it breeds in the circumpolar regions of both the Old and New World down to about 50° N. in Europe and Asia, and 42° N. in America. During the northern winter it is found about the coasts of South America and South Africa, and even further south in the Southern Ocean.

As the following list of South African localities shows, this Tern is by no means confined to the coast, or, indeed, to the mouths of rivers: Cape Colony—Table Bay, August, and Tulbagh, breeding dress (Layard), Graaf Reinet, breeding dress, Heidelberg, October, non-breeding, Kentani Transkei, June, non-breeding, Port St. John's, June, non-breeding (S. A. Museum); Natal—Newcastle, November (Giffard).

767. *Sterna balænarum.* *Damara Tern.*

Sternula balænarum, *Strickland, Contr. Orn.* 1852, p. 160; *Gurney, in Andersson's B. Damara*, p. 363 (1872).

Sterna balænarum, *Saunders, P. Z. S.* 1876, p. 664; *Sharpe, ed. Layard's B. S. Afr.* p. 705 (1884); *Saunders, Cat. B. M.* xxv, p. 111 (1896); *Shelley, B. Afr.* i, p. 163 (1896); *Reichenow, Vög. Afr.* i, p. 68 (1900).

Description. *Adult in breeding plumage.*—Forehead, lores, crown and nape black, rest of the upper parts pale lavender-grey, outer webs and outer halves of inner webs of the three outer primaries dark grey, shafts and inner halves of the inner webs white; below white, slightly washed with pearly on the breast.

Iris dark brown; bill black; legs and feet yellowish.

Length about 8·5; wing 6·70; tail 2·60; depth of fork 1·0; culmen 1·1; tarsus .55.

In non-breeding plumage the black of the head is mottled and flecked with white. The young bird has the wing-coverts slightly darker and the lower mandible horn-colour.

Distribution.—The Damara Tern is found along the south-west coasts of Africa from Loango to Table Bay; it was first obtained by Andersson at Walvisch Bay, where it breeds; Layard and subsequent collectors have met with it on Robben Island off Table Bay in the months of March and November, in the former case in non-breeding, in the latter in breeding plumage. It has not been definitely recorded from the southern coasts of the Colony, or from elsewhere along the South African coast-line.

Habits.—Andersson states that at Walvisch Bay, where it is very abundant, this little Tern flies in pairs or small flocks, uttering harsh and rapid cries. It feeds on small fishes and crustacea, in search of which it explores the creeks and shallows left by the receding tide. It is swift of flight and rapid of movement. Andersson found this bird breeding at Walvisch Bay, the eggs being deposited in a small hole scooped in the sand.

768. **Sterna minuta.** *Little Tern.*

Sterna minuta, Linn. *Syst. Nat.* 12th ed. i, p. 228 (1766); Dresser, *B. Eur.* viii, p. 279, pl. 582 (1876); Sharpe, ed. *Layard's B. S. Afr.* p. 705 (1884); Saunders, *Cat. B. M.* xxv, p. 116 (1896); Shelley, *B. Afr.* i, p. 163 (1896); Reichenow, *Vög. Afr.* i, p. 66 (1900).

Description. Adult Female in breeding plumage.—Forehead as far as the eye white, lores, crown and nape black, rest of the upper surface a pearly-grey, becoming whiter on the rump and tail, the outer feathers of which are quite white; the shafts of the outer two primaries blackish, the webs generally also dusky; below white throughout.

Bill yellow tipped with black; legs orange-yellow.

Length about 9·0; wing 6·5; tail 2·75; depth of fork .75; culmen 1·2; tarsus .68.

The male has as a rule a longer tail; in non-breeding plumage there is more white on the forehead and the streamers are shorter.

Distribution.—The Little Tern is found breeding throughout Europe south of 60° N. latitude eastwards as far as Northern India; in winter it travels southwards to North, West, and perhaps South Africa. A single example in the British Museum from “Cape seas” presented by Sir A. Smith, constitutes the only record of its occurrence within our limits.

769. *Sterna saundersi*. *Saunders' Tern.*

Sterna minuta (*nec Linn.*), *Schlegel, Mus. P.-Bas Sternæ*, p. 22 (1868) [in part, from Natal].

Sterna saundersi, *Hume, Str. Feathers*, v, p. 324-6 (1877); *Saunders, Cat. B. M.* xxv, p. 120 (1896); *Shelley, B. Afr.* i, p. 163 (1896); *Reichenow, Vög. Afr.* i, p. 67 (1900).

Description.—Closely resembling *S. minuta*, distinguished by its paler mantle, greyer rump and tail, the blackness of the webs of the three outer primaries on both sides of the black shafts and the very straight bill.

Bill dusky-yellow, usually black at the tip; legs brownish-yellow.

Length 9·0; wing 6·6; tail 3·0; depth of fork 1·1; culmen 1·3; tarsus .6.

Distribution.—Saunders' Tern, which is little more than a subspecies of the Little Tern, is found along the shores of the Indian Ocean from Burma to the Red Sea and down the coast of Africa to Natal, Madagascar, the Seychelles and Macarene Islands.

There are examples of this species from Durban in the Leyden Museum obtained many years ago by M. Jules Verreaux and in the British Museum obtained by Shelley in March.

770. *Sterna fuliginosa*. *Sooty Tern.*

Sterna fuliginosa, *Gmel. Syst. Nat.* i. p. 605 (1788); *Dresser, B. Eur.* viii, p. 307, pl. 587 (1877); *Saunders, Cat. B. M.* xxv, p. 106 (1896); *Reichenow, Vög. Afr.* i, p. 53 (1900).

“Wide-awake” of Ascension.

Description. *Adult.*—A broad white frontal band extending to the upper corner of the eye but not beyond; crown, nape and loreal stripe from in front of the eye to the gape black, rest of the upper surface dark brown; outer web of the outer tail-feathers white contrasting with the inner web; beneath, including the lower half of the sides of the face, white, tinged with greyish on the abdomen and under tail-coverts.

Bill and feet black with a reddish tinge. Length 17; wing 11·5; tail 7·0; depth of fork 4; culmen 1·5; tarsus .9. In the non-breeding dress the lores and crown are flecked with white.

Distribution.—The Sooty Tern is found throughout the tropical and subtropical seas wherever suitable islands and reefs exist; it occasionally wanders as far north as Maine in North America and even to England. In African seas this Tern is met with on Fernando Po, Ascension and St. Helena on the Atlantic side and on Zanzibar, Mafia and other islands in the Indian Ocean, so that although never yet definitely recorded from within our limits it is probable that it will be met with at some future time. This is the Tern which breeds in such large numbers on the island of Ascension. The places (three in number), where this takes place are known to the inhabitants as "Wideawake Fairs" and the bird as the Wideawake bird; here there are congregated thousands of Sooty Terns all engaged in the duty of incubating their single egg; these are white or faintly tinged with reddish and thickly or sparsely spotted and blotched with reddish-purple with underlying fainter spots of pale lilac. The eggs are somewhat rough in texture and measure about 2·05 × 1·5. Good accounts of the "Wideawake fairs" will be found in the *Ibis* (1868 p. 286 and 1879 p. 277) by Captain Sperling and Dr. Penrose. There are eggs in the South African Museum from Latham Island, 40 miles south of Zanzibar, as well as from Ascension presented by Captain A. C. Gurney, R.N.

Genus III. ANOUS.

Type.

Anous, Stephens, Genl. Zool. xiii, pt. 1 p. 139 (1825)... *A. stolidus.*

Bill long and strong and not much compressed, downcurved towards the tip; both mandibles equal; nostril an elongated slit in a groove, rather nearer the centre of the bill than in *Sterna*; wings as in *Sterna*; tail long, more than half the length of the

wing, the outer feathers considerably shorter than the central ones, the fourth pair from the outside the longest; tarsus short, clearly less than the middle toe and claw.

The Noddies, two species of which are recognised by Saunders, are found throughout the tropical and semitropical seas of the whole world. As a rule they are met with in the open sea or near oceanic islands; they seldom resort to the coasts of the continents.

771. *Anous stolidus*. Noddy.

Sterna stolida, Linn. *Syst. Nat.* 12th ed. i, p. 227 (1766).

Anous stolidus, Gould, *B. Austr.* vii. pl. 34 (1848); Sharpe, *ed. Layard's B. S. Afr.* p. 706 (1884); Saunders, *Cat. B. M.* xxv, p. 136 (1896); Shelley, *B. Afr.* p. 164 (1896); Reichenow, *Vög. Afr.* i, p. 74 (1900).

Description.—*Adult*.—Forehead and crown lavender grey becoming slightly darker on the neck; lores and round the eye almost black; upper parts dark brown, the primaries and tail a good deal darker; below dark brown with a leaden tinge on the throat, paler on the under wing-coverts.

Eyes, beak and legs blackish; webs which extend to the tips of the toes, ochraceous. Length about 15·0; wing 10·5; tail 6·4; culmen 1·80; tarsus 1·0. The sexes are alike; the young have less lead colour on the throat and a dark line along the upper wing coverts.

Distribution.—The Noddy, so called by sailors from its tameness, and therefore supposed stupidity, is found throughout the tropical and subtropical seas of almost all the world. It breeds on the rocky islets off St. Helena and Ascension and on Inaccessible Island near Tristan da Cunha in the Atlantic, also on Sandy Island near Madagascar whence its eggs were obtained by Mr. Layard in 1856 during his voyage on H.M.S. "Castor." There are two examples from "Cape Seas" in the British Museum.

Genus IV. MICRANOUS.

Type.

Micranous, Saunders, *Bull. B. O. C.* iv, no. 23, p.

19 (1895) *M. tenuirostris*.

Bill long and slender, the distance from the angle of gony to the tip of the bill longer than that to the gape; the third pair of rectrices from the outside the longest; in other respects resembling *Anous*.

This genus was formed for the reception of three Noddies, distributed over tropical and subtropical seas. One of these will not improbably be found in South African waters.

772. *Micranous leucocapillus. Lesser Noddy.*

Anous leucocapillus, Gould, P. Z. S. 1845, p. 103; *id. B. Austr.* vii, pl. 36 (1848); Reichenow, Vög. Afr. i, p. 75 (1900).

Micranous leucocapillus, Saunders, Cat. B. M. xxv, p. 145 (1896).

Description.—*Adult.*—Forehead and crown greyish white, rest of the plumage very dark brown becoming quite black in a ring round the eye.

Iris brown; bill black; legs brown. Length about 14·0; wing 8·8; tail 4·0; culmen 1·80; tarsus ·90. The sexes are alike; the immature birds have the forehead, crown and lores white and the neck and nape sooty black.

Distribution.—The Lesser Noddy has much the same range as the Common Noddy, being found throughout the tropical and subtropical seas of the world. It breeds on Ascension and Inaccessible Island near Tristan da Cunha and will probably be found to occur off the South African Coasts.

Genus V. GYGIS.

Type.

Gygis, Wagler, Isis, 1832, p. 1223 *G. candida.*

Bill stout at the base and pointed, culmen straight or even slightly upcurved; tail forked but the outer pair of feathers considerably shorter than the next or third pair which are the longest; tarsus very short, about half the length of the middle toe and claw; web between the toes strongly incised, leaving the distal joint quite free.

Two species of this genus have been described—the one widely spread over intertropical seas, the other confined to the Marquesas Islands of the Pacific. The former probably occurs in South African waters.

773. **Gygis candida.** *White Noddy.*

Sterna candida, *Gmel. Syst. Nat.* i, p. 607 (1788).

Gygis candida, *Gould, B. Australia* vii, pl. 30 (1848); *Saunders, Cat.*

B. M. xxv, p. 149 (1896); *Reichenow, Vög. Afr.* i, p. 73 (1900).

“White Bird” at St. Helena.

Description.—*Adult.*—Throughout above and below white, except for an inconspicuous ring of black round the eye; the shafts of the primaries and rectrices more or less tinged with brown.

Iris blue; bill black; feet black; webs yellow, and incised to the first joint of the toes.

Length about 12·5; wing 10·0; tail 3·70; tarsus .60; culmen 1·55. The sexes appear to be alike in plumage: possibly the rectrices are longer in the male. In young birds the shafts of the rectrices are rather darker.

Distribution.—The White Noddy is found about the tropical and subtropical islands of the Atlantic, Indian and Pacific Oceans. It is well known at St. Helena and Ascension where it breeds, and is also found about Madagascar and the Mascarene Islands in the Indian Ocean. Mr. Layard met with it on Sandy Island north-east of Madagascar in 1856 (see *Cape Monthly Magazine* iii. 1858, p. 289).

Family III. RHYNCHOPIDÆ.

This family contains only one genus and is at once distinguished by its remarkably compressed and flattened bill in which the lower mandible considerably exceeds the upper one in length. Of the Garrodian thigh muscles the ambiens is absent; the cæca are rudimentary.

Genus I. RHYNCHOPS.

Type.

Rhynchos, *Linn. Syst. Nat.* 12th ed. i, p. 228 (1766) ... *R. nigra*.

Bill very much compressed, especially the lower mandible, which is like the blade of a paper knife, and is considerably longer than the upper one; both are truncated at the tips, and the lower one is marked with oblique ridges; nostrils irregular ovals near the base of the bill in a slight depression; wing very long, reaching

far beyond the tail, the first primary the longest; tail comparatively short and slightly forked; feet small, tarsus a good deal longer than the middle toe and claw; web between the inner and middle toe deeply incised.

These curious birds with their very remarkably shaped bills are found about the rivers of temperate and tropical America, Africa and southern Asia. Out of five species only one occurs in Africa and is here described.

774. *Rhynchos flavirostris*. *African Skimmer.*

Rhynchos flavirostris, Vieill. *N. Dict. d'Hist. Nat.* iii, p. 388 (1816); *Livingstone, Missionary Travels*, p. 252 (1857); *Kirk, Ibis*, 1864, p. 337; *Gurney, in Andersson's B. Damaral.* p. 365 (1872); *Shelley, B. Egypt*, p. 302, pl. 14 (1872); *Sharpe, ed. Layard's B. S. Afr.* p. 706 (1884); *Holub & Pelzeln, Orn. Süd-Afr.* p. 333 (1882); *Saunders, Cat. B. M.* xxv, p. 158 (1896); *Shelley, B. Afr.* i, p. 164 (1896); *Reichenow, Vög. Afr.* i, p. 76 (1900); *Alexander, Ibis*, 1900, p. 442.

"Scissor-billed Tern" of some authors.

Description. Adult Male in breeding plumage.—Forehead white; crown, nape and rest of the upper parts deep umber-brown, primaries darker brown; secondaries and tail-feathers edged with whitish; below including the sides of the face and neck white throughout; under wing-coverts smoky-brown.

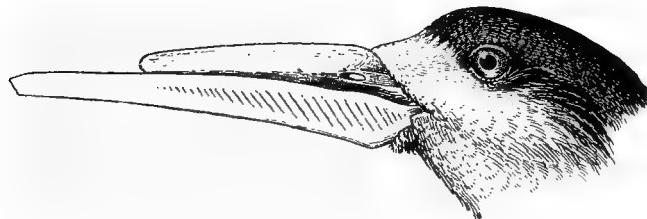


FIG. 140.—Head of *Rhynchos flavirostris*. $\times \frac{1}{2}$

Iris brown, bill vermillion to deep orange on the upper, paler on the lower mandible; tarsi and toes vermillion.

Length about 14·0; wing 12·5; tail 4·0; tarsus .92; culmen 1·7; lower mandible 2·4.

The female is slightly smaller; a young bird has the forehead slightly streaked with grey and the bill yellowish on its basal, black on its distal half; in the nestling the bill resembles that of a tern, and is without any of the curious features of the adult.

Distribution.—The African Skimmer is found throughout the greater part of Africa, where there are suitable rivers, from Senegal to Damaraland on the west side, and from Egypt to the Zambesi on the east.

Within our limits this bird has not been met with south of the Orange River, though recently the South African Museum received an example from the Reit River, a tributary of the Vaal in the Kimberley District; other localities are: Potchefstroom, January (Stenning in S. A. Mus.); Ondonga and Lake Ngami (Andersson) and the Zambesi River (Livingstone, Kirk, Holub and Alexander).

Habits.—The very curious flattened, paper-knife-like bill of this bird at once attracts the attention of the observer, and so far no satisfactory explanation of the use of this remarkable modification has been suggested. The Skimmer is found chiefly about larger rivers, where it passes up and down with fairly powerful flight, spending most of the time so close to the surface of the water that the tip of the projecting lower mandible is immersed, and it thus ploughs up the water with its bill, leaving a trail behind it.

Usually flocks of from ten to twenty birds are to be seen together in this way in the early morning or late afternoon, or even on moonlight nights, while during the middle of the day they usually rest on the sandbanks. There is a certain amount of doubt as to what constitutes their food, but Blanford states that he has taken fish from the stomach of the Indian species, which is closely allied to our African one; generally, however, a yellowish oily fluid is alone found, and it has been suggested that the food of the Skimmer consists entirely of fresh water algae taken from the surface of the water.

Alexander found this bird breeding in September on a sandbank on the Zambesi near Chicowa; the nest, which contained three much incubated eggs, was a deep, capacious hole scratched in the sand; the eggs were stone-coloured, blotched and spotted all over with light umber-brown and underlying markings of purplish-brown. Alexander adds that the flight is steady, the wing-beats being very marked, and the bird skimming the water the whole time; the note is a loud, harsh "kip," constantly repeated. A nearly similar account of the nesting and other habits of the bird is given by

Livingstone, on p. 252 of his "Missionary Travels," as observed by him on the Upper Zambesi near Libonta.

Family IV. STERCORARIIDÆ.

Sternum with one notch on both sides posteriorly; of the five Garrodian thigh-muscles the accessory femoro-caudal alone is absent; cæca long and well developed.

Only one genus is here recognised, in the description of which will be found the more prominent external characters.

Genus I. STERCORARIUS.

Type.

Stercorarius, Brisson, *Orn.* vi, p. 202 (1760) *S. crepidatus*.

Bill stout and broad, shaped somewhat like that of a Gull, with a terminal hook covering the tip of the lower mandible; the basal two-thirds covered with a horny cere which overlaps the nostrils, so that the opening is reduced to a small, rounded or slit-like aperture at the front end of the cere; wings long and strong, the first primary the longest; tail long and round, but the two middle feathers prolonged beyond the others, sometimes to a very considerable extent; tarsus stout with transverse scutes in front and rounded scales laterally and posteriorly; anterior toes very fully webbed, posterior toe small and stumpy; claws curved, sharp and strong.

Some seven species of Skua are generally recognised, four of these are Arctic or north temperate, three Antarctic or south temperate; two of the northern forms and one of the southern visit our shores.

Key of the Species.

- A. Large; wing over 16·0; central tail-feathers not projecting more than ·5 inch *S. antarcticus*, p. 452.
- B. Intermediate; wing 14·0 to 16·0; central tail-feathers broad, rounded at the ends, and projecting about 4·0 inches *S. pomatorhinus*, p. 455.
- C. Smaller; wing under 14·0; central tail-feathers pointed and tapering *S. crepidatus*, p. 453.

775. *Stercorarius antarcticus.* Southern Skua.

Lestrina antarctica, *Lesson*, *Traité*, p. 616 (1831); *Fleck*, *Journ. Ornith.* 1894, p. 379.

Lestrina catarrhaetes (*nec Linn.*) *Layard*, *Ibis*, 1867, p. 459.

Stercorarius catarrhaetes, *Layard*, *B. S. Afr.* p. 366 (1867); *id. Ibis*, 1869, p. 77.

Stercorarius antarcticus, *Saunders*, *P. Z. S.* 1876, p. 321; *Sharpe and Eaton*, *Phil. Trans.* vol. 168, p. 109, pl. vii, fig. 1 (1879); *id. ed. Layard's B. S. Afr.* p. 696 (1884); *Swinburne*, *P. R. Phys. Soc. Edin.* ix, p. 200 (1886); *Green*, *Ocean Bds.* p. 87 (1887); *Shelley*, *B. Afr.* i, p. 165 (1896); *Reichenow*, *Vög. Afr.* i, p. 38 (1900).

Megalestris antarctica, *Saunders*, *Cat. B. M.* xxv, p. 319 (1896).

"Cape Hawk" or "Sea Hen" of sailors, "Cape Egmont Hen" of the Falkland Islanders.

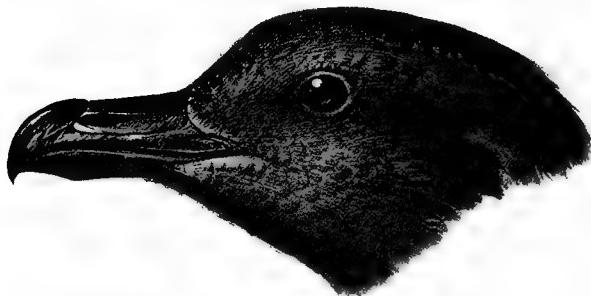


FIG. 141.—Head of *Stercorarius antarcticus.* $\times \frac{1}{2}$

Description. Adult Female.—General colour above and below brown, paler round the neck and of a more earthy shade below; neck, mantle and scapulars with paler and more rufous shaft markings to the feathers; primaries with the shafts and basal halves white, forming a conspicuous band when the bird is flying.

Iris light brown; bill and legs black.

Length (in flesh) 23·5; wing 16·25; tail 6·5; culmen 1·5; tarsus 2·95; middle toe and claw 3·10.

The sexes are alike; the young birds have a tinge of rufous on the lower surface.

Distribution.—The Southern Skua ranges over the southern portion of the Atlantic and Indian Oceans from the Falkland Islands to New Zealand, extending northwards to Norfolk Island and to Madagascar. It is known to breed on the Falklands,

Tristan da Cunha, Gough Island, the Crozets and Kerguelen. Further south in the Antarctic pack ice and on the Antarctic continent it is replaced by another closely allied species (*S. maccormicki*).

The Southern Skua visits the South African coasts during the southern winter. It has been recorded from the following places : Walvisch Bay, July (Fleck), Table Bay, April (Layard), False Bay, July and August (Turbyne in South African Mus.), Algoa Bay (Swinburne).

Habits.—The Southern Skua is a most rapacious and blood-thirsty bird; it is at once the Hawk and the Vulture of the Southern Seas. On Kerguelen it chases and kills the Blue Petrels and nearly all other birds, watching for them to emerge from their nest-burrows in the evening, and again on their return from fishing in the early morning; it also robs the Gulls and Gannets of the fishes they have caught, nor does it despise carrion, such as dead Seals and Whales, or, in fact, any garbage of an edible nature; the stomachs of some examples recently obtained for the South African Museum contained the remains of fish and "bully beef." They are very bold and fearless, and will fly in the face of intruders in defence of their nest and young. The voice is a croak something like that of a Crow.

The Southern Skua is not known to breed nearer than the Crozet Islands, whence Mr. Layard received eggs obtained by Captain Arsmson. A good account of its habits in Kerguelen is given by Mr. Hall (*Ibis*, 1900, p. 8).

776. *Stercorarius crepidatus*. *Richardson's Skua.*

Larus crepidatus, Banks, in Cook's Voy., Hawkesworth's ed. ii, p. 15 (1773).

Lestris spinicauda, Hardy, Rev. Mag. Zool. 1854, p. 657.

Stercorarius spinicauda, Layard, B. S. Afr. p. 366 (1867).

Stercorarius parasiticus, (nec Linn.) Gurney, in Andersson's B. Dammaral. p. 357 (1872).

Stercorarius crepidatus, Dresser, B. Eur. viii, p. 471, pls. 611, 612, fig. 2 (1876); Sharpe, ed. Layard's B. S. Afr. p. 695 (1884); Green, Ocean Bds. p. 84 (1887); Saunders, Cat. B. M. xxv, p. 327 (1896); Shelley, B. Afr. i, p. 165 (1896); Reichenow, Vög. Afr. i, p. 39 (1900).

Description. *Adult in non-breeding plumage.*—In the sooty form the plumage is brown throughout, darkest on the mantle, wings and

tail; acuminate feathers of the neck streaked with golden-straw colour; outer primaries with white shafts. In the white-breasted form there is more or less white on the hind neck, chin, breast and abdomen.

Bill brownish-horn, darker in front of the cere, legs black.

Length about 18·0; wing 11·5; tail 4·5, to end of central tail feathers up to 8·0; culmen 1·3; tarsus 1·85; middle toe and claw 1·70.

Young birds are brown above, often mottled and streaked; upper tail-coverts barred with dark brown, white and rufous; the under surface white barred with brown.

Distribution. — Richardson's Skua has a circumpolar range, during the northern summer breeding as far south as Scotland. During the northern winter it migrates southwards to Rio de Janeiro and the Cape, along the Atlantic seabords, to the Persian Gulf in the Indian Ocean, and to New Zealand waters and California in the Pacific.

Within our limits this bird has been noticed in Walvisch Bay by Andersson, who states that it is not at all uncommon during certain seasons of the year; it is found in Table Bay during the summer (October to March), and Mr. J. G. Brown informs me that he has shot a specimen in Algoa Bay.

Habits. — Richardson's Skua is remarkable for presenting, irrespective of sex, two very distinct phases of plumage, one sooty-brown throughout, the other dark above and white below. Birds of both phases pair with one another indiscriminately where they meet, and the young are sometimes intermediate. Mr. Saunders seems to think that the darker birds are more southerly in their range, but there are examples of both varieties in the South African Museum obtained in Table Bay.

This bird is almost parasitic in its mode of life; it seldom fishes itself, but constantly chases the lesser Gulls and Terns and compels them to disgorge their prey. So active is the Skua that it usually manages to catch the fish as it falls from the bill of the Gull before it reaches the surface of the water.

Mr. Andersson states that this Skua chiefly frequents the shallows and lagoons along the coast; it is not known to breed in South Africa, and probably will not be found to do so. In Scotland its nest is found inland in a hollow in heather or moorland grass. Two eggs are laid of a greenish-brown colour blotched with dark brown.

777. *Stercorarius pomatorhinus.* *Pomatorhine Skua.*

Lestris pomarina, *Temm. Man. d'Orn.* p. 514 (1815).

Stercorarius pomarinus, *Gurney*, in *Andersson's B. Damaral.* p. 357 (1872); *Reichenow*, *Vög. Afr.* i, p. 38 (1900).

Stercorarius pomatorhinus, *Sharpe*, ed. *Layard's B. S. Afr.* p. 695 (1884); *Swinburne*, *P. R. Phys. Soc. Edin.* ix, p. 200 (1886); *Saunders*, *Cat. B. M.* xxv, p. 322 (1896); *Shelley*, *B. Afr.* i, p. 165 (1896).

Description. *Adult.* — Resembling *S. crepidatus* but larger; the central tail-feathers are broad, rounded at the end, project about four inches in the adult and are twisted vertically; the acuminate feathers of the neck are white edged with warm straw yellow.

Bill horn brown; legs reddish-black.

Length 21·0; wing 14·25; tail about 5·25; with central rectrices up to 9·25; culmen 1·7; tarsus 2·1; middle toe and claw 2·0.

Distribution. — This is an Arctic bird, breeding chiefly in the Arctic regions of both the Old and New Worlds north of 70°; during the northern winter it ranges southwards to North Australia, Peru and South-west Africa.

Within our limits it has been procured in Walvisch Bay by Andersson; one of the two examples obtained by him is now in the British Museum. Mr. S. Swinburne states that he once observed, but did not obtain, a Pomatorhine Skua in 32° S. lat. 16° E. long. about 100 miles off the west coast of the Colony.

Order XVIII. TUBINARES.

The members of this Order can be at once distinguished from all other birds by their nostrils, which open in the form of tubes, either conjoined on the culmen or separate on the sides of the mandibles; in addition to this the three anterior toes are always completely webbed and the hallux when present is small, consisting of only one phalanx; an aftershaft is present and the rectrices vary in number from twelve to sixteen.

The skull is schizognathous and holorrhinal; the fifth cubital remex is absent; the oil gland is tufted; there are two carotids and the Garrodian thigh-muscles vary in the different families but the femoro-caudal and semitendinosus are always present.

As with the other Orders so with this there is a good deal of disagreement among authors as to the system of classification most suitable to express the inter-relations of the members of the group. Garrod and Forbes laid great stress on the distinctness of the Long-legged Petrels assigned to the genus *Oceanites* and its allies from all the other members of the Order, and I think that on the whole it is best to follow these authors, recognising only two families and assigning subfamily rank only to the Stormy Petrels, Puffins, Diving Petrels and Albatroses.

Key of the Genera.

- A. Nostrils opening more or less forwardly on the top of the culmen, side by side or with a single opening.
 - a. Tarsus covered in front by a single plate.
 - a¹. Phalanges of toes normal, claws rounded and pointed..... *Oceanites*, p. 458.
 - b¹. Phalanges of toes broad and flat; claws flattened and spade-like *Fregetta*, p. 461.
 - b. Tarsus with transverse scutellations in front... *Garrodia*, p. 460.
 - c. Tarsus covered in front with small hexagonal plates.
 - a¹. Small birds, wing under 6·0; plumage sooty. *Procellaria*, p. 464.
 - a². Tail square or slightly rounded *Oceanodroma*, p. 467.
 - b¹. Larger birds, wing always exceeding 6·0.
 - a². Sides of the palate smooth without lamellæ.
 - a³. Tarsus compressed, with a sharp edge anteriorly.
 - a⁴. Tail with twelve feathers.
 - a⁵. Nasal tube short and low about one-fourth of the length of the bill; the openings directed forwards and upwards *Puffinus*, p. 468.
 - b⁵. Nasal tube higher, the openings directed forwards and inwards ... *Priofinus*, p. 472.
 - b⁴. Tail with fourteen feathers; nasal tube longer, about one-third of the length of the bill *Priocella*, p. 473.
 - b³. Tarsus not compressed, rounded in front.
 - a⁴. Bill large, its length from the tip to the base measured straight far exceeding its distance from the eye; its colour chiefly yellow *Majaqueus*, p. 474.

- b⁴.* Bill shorter, its length from the tip to the base measured straight, about equal to its distance from the eye; its colour black *Estrelata*, p. 477.
- b².* Sides of the palate with a series of lamellæ more or less developed.
- a³.* Birds of large size; wing about 20·0; sixteen tail-feathers; nasal tube long about half the length of the bill *Ossifraga*, p. 482.
- b³.* Birds of intermediate size; wing about 10·0; fourteen tail-feathers; nasal tube shorter, about one third of the length of the bill..... *Daption*, p. 485.
- c³.* Birds of small size; wing about 8·0; twelve tail-feathers; nasal tube very short about one-fourth of the length of the bill *Prion*, p. 487.
- B.* Nostrils opening upwards, side by side on the top of the bill; no hind toe..... *Pelicanoides*, p. 493.
- C.* Nostrils each enclosed in a separate long sheath and opening on either side of the bill between the culminicorn and the latericorn.
 - a.* Tail short and rounded; no trace of a hind toe; lower mandible without longitudinal sulcus.
 - a¹.* Base of the culminicorn wide, meeting the latericorn behind the nostrils *Diomedea*, p. 494.
 - b¹.* Base of the culminicorn narrowed posteriorly, separated from the latericorn behind the nostrils by membrane *Thalassogeron*, p. 501.
 - b.* Tail long and wedge-shaped; hind toe represented by a rudimentary claw; a longitudinal groove along the lower mandible *Phæbetria*, p. 505.

Family I. OCEANITIDÆ.

Secondaries never more than ten in number; leg bones longer than the wing-bones; tarsi very long covered in front by a single shield or by transverse scutes; claws more or less flattened; no cæca; no basipterygoid processes; semitendinosus with an accessory head; ambiens, when present, not passing over the knee.

Genus I. OCEANITES.

Type.

- Oceanites**, *Keys. & Blasius, Wirb. Eur.* ii, pp. xcii,
131, 238 (1840) *O. oceanicus*.

Bill slender, compressed and slightly hooked; nostrils opening externally by a single rounded aperture on the culmen about half way down the bill; wings very long and pointed, the second primary the longest; only ten-secondaries; tail of twelve feathers nearly square, the outer ones only slightly surpassing the middle ones; tarsus very long about one-and-a-half times the length of the middle toe, covered in front by a single long smooth shield;



FIG. 142.—Left foot of *Oceanites oceanicus*. $\times \frac{1}{2}$

middle and outer toes nearly equal in length; the basal phalanx of the middle toe normal and about equal to the others in length; hind toe rudimentary; webs yellow; claws rounded and pointed; size small and plumage sooty.

The sternum is slightly excavated behind, there are no cæca to the intestine and the ambiens muscle is present.

Two species only of this genus are generally recognised, the widely spread Wilson's Petrel here described, and a second rarer species confined to the west coast of South America.

778. *Oceanites oceanicus.* *Wilson's Petrel.*

Procellaria oceanica, *Kuhl, Beitr.* p. 186 (1820); *Gurney, in Andersson's B. Damara*, p. 351 (1872).

Procellaria wilsoni, *Bp., Journ. Acad. Phil.* iii, p. 281, pl. 9 (1828).

Thalassidroma wilsoni, *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 57 (1858); *Layard, B. S. Afr.* p. 359 (1867).

Oceanites oceanicus, *Dresser, B. Eur.* viii, p. 505 pl. 614 (1878); *Sharpe, ed. Layard's B. S. Afr.* p. 763 (1884); *Swinburne, Proc. R. Phys. Soc. Edin.* ix, p. 197 (1886); *Salvin, Cat. B. M.* xxv, p. 358 (1896); *Shelley, B. Afr.* i, p. 166 (1896); *Reichenow, Vög. Afr.* i, p. 35 (1900).

Description. *Adult.*—General colour sooty brown, darkest on the wings and tail, paler below; bases of the lateral tail feathers, and the upper and under tail-coverts white, the latter slightly tipped with brown on the inner webs; greater wing coverts pale sometimes edged with whitish.



FIG. 143.—Head of *Oceanites oceanicus.* $\times \frac{1}{2}$

Iris dark brown; bill and legs black; inner portion of the web between the toes bright yellow. Length 7·5; wing 5·5; tail 2·6; culmen .55; tarsus 1·35; middle toe .9. Sexes alike, the nestling covered with uniform greyish black down.

This Petrel can be at once distinguished by its yellow webs, its very long tarsi without any indication of scutes or shields in front, and square tail.

Distribution.—Wilson's Petrel has a very extended range; it is found throughout the Southern Ocean, whence it wanders northwards in the Atlantic as far as Labrador and the British coasts, in the Indian Ocean it appears on the Mekran coast of Beluchistan and around the Australian seas and New Caledonia.

It is occasionally met with about the South African coast. Andersson states that it is not uncommon about Walvisch Bay; Layard obtained examples in Table Bay in April 1865 some of which are still preserved in the South African Museum; Mr. J. G.

Brown states that it is rare in Algoa Bay and Mr. Rickard has seen it off East London.

Habits.—Like its congeners, Wilson's Petrel flits over the waves and often follows ships to pick up odds and ends flung overboard ; when caught they generally disgorge a mass of oily matter, which rapidly congeals. Andersson states that this Petrel is very tame, and will come close up to the fishermen, when they are cleaning their fish on the beach, to secure scraps.

Wilson's Petrel is not known to breed in the northern Hemisphere. Its nesting habits were first described by the Rev. A. E. Eaton (*Phil. Trans.*, vol. 168, p. 132, 1879), who visited Kerguelen Island as naturalist to the "Transit of Venus" Expedition, in 1874-5, and Mr. R. Hall (*Ibis*, 1900, p. 19), has supplemented Mr. Eaton's account with additional information.

Wilson's Petrel breeds among the crevices of the cliffs or under large boulders and stones in Kerguelen in February. The nest is made of Azorella stalks, and one egg, white with a few pink spots, oval in shape, and measuring $1\cdot3 \times \cdot9$ is laid ; both sexes seem to incubate, changing places in very early morning, and in the gloaming, and going straight out to sea on leaving the nest, so that the birds are very seldom seen.

Wilson's Petrel also seems to breed on the Antarctic Continent, though the members of the Southern Cross Expedition did not bring back any eggs with them.

Genus II. **GARRODIA.**

Garrodia, *Forbes, Proc. Zool. Soc.*, 1881, p. 736 *G. nereis*.
Type.

Resembling *Oceanites* in most respects, but at once externally distinguished by the transverse scutellations of the tarsus, which is also somewhat longer proportionately to the middle toe ; the claws are somewhat more flattened than in *Oceanites* but not nearly so much as in *Fregetta*. The ambiens muscle is present and the sternum is entire posteriorly.

Only the one species here described is referred to this genus.

779. *Garrodia nereis*. *Garrod's Petrel.*

Thallassidroma nereis, *Gould*, *P. Z. S.* 1840, p. 178; *id. Bds. Austr.* vii, pl. 64 (1845).

Garrodia nereis, *Forbes*, *P.Z.S.*, 1881, p. 735; *Salvin*, *Cat. B. M.* xxv, p. 361 (1896).

Description. *Adult.*—General colour above slaty-black, darkest on the head, and becoming lighter on the rump and upper tail-coverts, which are silvery-grey; tail-feathers also silvery-grey broadly tipped with black; median wing-coverts ashy-grey, these, as well as some feathers of the back and upper tail-coverts very narrowly edged with white on the tips; below from the breast to the under tail-coverts, including the inner under wing-coverts, white; flanks streaked with grey. Bill and legs black.

Length 7·25; wing 5·25; tail 2·5; culmen .52; tarsus 1·24; middle toe .9. This Petrel can be recognised by its strongly scutellated tarsus and by its white underparts.

Distribution.—This little Petrel was first discovered by Gould in Bass Straits between Australia and Tasmania; it appears to be spread over the greater part of the Southern Ocean, as examples have been met with in the Australian and New Zealand seas, as well as near the Falkland Islands and Kerguelen. It was found breeding on the latter island by Dr. Kidder, the naturalist of the United States Transit of Venus Expedition of 1874-5 (*Bull. U.S. Nat. Mus.*, No. 3, p. 16), and eggs have also been obtained on Chatham Island to the east of New Zealand by Mr. H. O. Forbes.

There is an example, unfortunately without a recorded history, in the collections of the South African Museum. As it was probably obtained in the Cape seas, and at any rate the bird will doubtless be found within our limits, I have included it here in this work.

Genus III. **FREGETTA.**

Type.

Fregetta, *Bp. Compt. Rend.*, xli. p. 1113 (1856)... *F. melanogaster*.

Bill compressed and rather strongly hooked; nostrils opening by a single rounded aperture at the end of a somewhat upturned tube lying on the culmen; no trace of a septum externally; wings long and pointed, the second primary the longest, the secondaries only ten in number; tail of twelve feathers, square or deeply

forked; tarsus very long, exceeding the tibia and middle toe considerably, covered in front by a single smooth plate; phalanges flattened, especially the basal one of the middle toe, which is equal to or longer than the distal ones and claw; outer and middle digits subequal; claws flattened, spade-like and pointed; hind toe very minute; sternum entire, no ambiens muscle.

Four species, found throughout the Oceans of the southern Hemisphere, though wandering north of the equator from time to time, make up this genus; two of these inhabit the Cape seas.



FIG. 144.—Left foot of *Fregetta grallaria*. $\times \frac{1}{2}$

Key of the Species.

- A. Abdomen white with a central line of black .. *F. melanogaster*, p. 462.
- B. Abdomen wholly white. *F. grallaria*, p. 463.

780. ***Fregetta melanogaster.*** *Black-bellied Petrel.*

Thalassidroma melanogaster, *Gould, Ann. Mag. N. H.* xiii, p. 367 (1844); *id. B. Austr.* vii, pl. 62 (1847); *Layard, Ibis*, 1863, p. 249, 1867, p. 459; *id. B. S. Afr.* p. 358 (1867); *Sperling, Ibis*, 1868, p. 292, 1872, pp. 75, 76.

Thalassidroma tropica, *Gould, Ann. Mag. N. H.* xiii, p. 366 (1844).
Oceanitis tropica, *Sharpe, ed. Layard's B. S. Afr.* p. 764 (1884).

Oceanites melanogaster, *Shelley*, *B. Afr.* i, p. 166 (1896).

Cymodroma melanogaster, *Salvin*, *Cat. B. M.* xxv, p. 364 (1896).

Fregetta melanogaster, *Reichenow*, *Vög. Afr.* i, p. 36 (1900).

Description. *Adult.*—General colour sooty-black, darkest on the head and primaries, the coverts somewhat paler; upper tail-coverts, flanks and sides of the abdomen and bases of the under tail-coverts and rectrices white; middle of the abdomen sooty. Iris dark brown; bill and legs, including the webs, black.

Length 8·25; wing 6·10; tail 2·75; culmen .60; tarsus 1·5; middle toe .95. The curious flattened phalanges and claws at once distinguish this Petrel.

Distribution.—The Black-bellied Petrel ranges over the Southern Ocean, wandering northwards to the Tropic of Cancer in the Atlantic and to the Bay of Bengal in the Indian Ocean; it is specially abundant in the southern part of the Indian Ocean and in the seas of Australia and New Zealand.

Gould, who described this species, states that he met with it first off Cape Agulhas, when on his way to Australia, and it has been recorded by several naturalists from the seas in the neighbourhood of the Cape since. Lord Lindsay (now the Earl of Crawford) obtained examples in 36° S., lat. 40° E. long., and in 32° S. lat., 52° E. long., and the Southern Cross Expedition in 42° S. lat., 20° E. long.

Like other Petrels it breeds on the Islands of the Southern Ocean; there are eggs in the British Museum from Kerguelen and the Falklands, while Mr. Layard's correspondent, Captain Armonson, brought him eggs from the Crozet Islands.

781. *Fregetta grallaria*. *White-bellied Petrel.*

Procellaria grallaria, *Vicill. N. Dict. d'Hist. Nat.* xxv, p. 418 (1817).

Thalassidroma leucogaster, *Gould*, *B. Aus.* vii, pl. 63 (1847); *Layard*, *B. S. Afr.* p. 358 (1867).

Oceanitis leucogaster, *Sharpe*, ed. *Layard's B. S. Afr.* p. 764 (1884); *Swinburne*, *P. R. Phys. Soc. Edin.* ix, p. 197 (1886).

Cymodroma grallaria, *Salvin*, *Cat. B. M.* xxv, p. 366 (1896); *Parkin*, *Ibis*, 1900, p. 675.

Oceanites grallarius, *Shelley*, *B. Afr.* i, p. 166 (1896).

Description. *Adult.*—General colour sooty-black, rather greyer on the back, darkest on the tail and primaries; upper tail-coverts, concealed bases of the feathers of the chin, lower breast, abdomen,

inner under wing-coverts and under tail-coverts white; the longer under tail-coverts, which reach nearly to the tip of the rectrices, are broadly tipped with sooty; the bases of the lateral tail-feathers are white.

Iris brown; bill and legs black.

Length 7·75; wing 6·5; tail 3·0; culmen .60; tarsus 1·50; middle toe .96.

Distribution.—This Petrel, which has sometimes been considered to be the Black-bellied in another phase of plumage, is also found throughout the Southern Ocean and the Australian seas; in the Atlantic it wanders as far north as Florida and Cape Verd.

There is an example in the South African Museum, alluded to by Layard, which was obtained by Lieutenant Beardslee of the United States Navy, about 300 miles west of Cape Town in May, 1867, and Mr. Parkins came across this bird with many others on December 2nd in 39° S. lat., 8° E. long. (about 700 miles from Cape Town) when sailing to Australia in the clipper ship "Sobraon." Its breeding place and eggs appear to be unknown.

Family II. PROCELLARIIDÆ.

Secondaries never less than thirteen in number; leg bones shorter than the wing bones; tarsi comparatively short; covered in front with hexagonal scutes; claws sharp and compressed; cæca present; basipterygoid present or absent; no accessory head to the semi-tendinosus; ambiens always present (except in *Pelecanoides*) and passing over the knee.

Subfamily I. PROCELLARIINÆ.

Nostrils united externally above the culmen; margin of the sternum even; no basipterygoid processess; ambiens muscle present; cæca present (except in *Halocyptena*); second primary the longest.

Genus I. PROCELLARIA.

Type.

Procellaria, Linn. *Syst. Nat.* 12th ed. i, p. 212 (1766) P. pelagica.

Bill slender, compressed and hooked; nostrils united externally into a single tube on the top of it; wings long and pointed, secondaries at least thirteen in number; tail square, or slightly

rounded, consisting of twelve feathers; tarsus slightly longer than the middle toe and claw and about half the length of the femur, covered in front by hexagonal scutes; claws sharp and compressed; two cæca on the intestine; plumage sooty-black.

This genus contains only two species, the well-known Stormy Petrel, found throughout the greater part of the Atlantic, and a second species apparently confined to the neighbourhood of the Galapagos Islands in the Pacific.



FIG. 145.—Left foot of *Procellaria pelagica*. $\times \frac{1}{2}$

782. *Procellaria pelagica*. *Storm Petrel*.

Procellaria pelagica, Linn. *Syst. Nat.* 12th ed. i, p. 212 (1766); *Gurney*, in *Andersson's B. Damaral.* p. 351 (1872); *Sharpe*, ed. *Layard's B. S. Afr.* p. 765 (1884); *Salvin*, *Cat. B. M.* xxv, p. 343 (1896); *Shelley, B. Afr.* i, p. 166 (1896).

Thalassidroma oceanica (*nec Kuhl*), *Layard, B. S. Afr.* p. 359 (1867).

Thalassidroma pelagica, *Dresser, B. Eur.* viii, p. 497, pl. 613, fig. 2 (1874).

Hydrobates pelagicus, *Reichenow, Vög. Afr.* i, p. 34 (1900).

“Mother Carey’s Chicken” of Sailors.

Description. Adult.—General colour sooty-black, a little paler on the under surface; upper tail-coverts white tipped with black; under tail-coverts and tail-feathers with concealed white bases, but the shafts black throughout; a small patch of whitish on the under wing-coverts; bill and legs black.

Length about 7·5; wing 4·5; tail 2·0; culmen 0·5; tarsus 0·88; middle toe 0·71.

The sexes are alike, and the young resembles the adult but is of a paler brown.

Distribution.—The Storm Petrel is found throughout the Atlantic Ocean from the western coasts of the British Islands southwards to the Cape Seas. It is also not uncommon in the Mediterranean. According to Heuglin it occurs in the Indian Ocean, near the Straits of Babelmandeb in September and October during the north-east monsoon.

Within our limits Andersson notes it from Walvisch Bay, while it occasionally comes into Table Bay, as is evidenced by the specimen still in the South African Museum, procured by Mr. Layard in May, 1865, but erroneously identified by him. In addition, the Museum possesses an example from False Bay, obtained in January, and a third recently brought to the Museum in the month of September, 1900. Mr. J. G. Brown tells me he has seen the Storm Petrel in Algoa Bay, but it is rare there. It is not known to breed anywhere within our limits.

Habits.—The Storm Petrel frequents the open sea at a considerable distance from the land; it is, however, liable to be driven to the coast by storms, and has been met with very far inland after violent gales; it flies with considerable ease and swiftness just above the surface of the water, so that it sometimes appears to be paddling along on the top of the waves. It is from this habit of "walking on the water" that it is supposed to have obtained its name of Petrel, after the Apostle St. Peter.

The food of these birds consists of small crustacea, mollusca and fishes, and they frequently follow in the wake of a ship in hopes of picking up fatty matter among the garbage thrown out of the galley. From a slow-moving sailing vessel they can be easily caught, by trailing out over the stern long threads slightly weighted at one end; but by sailors such a proceeding is regarded as extremely unlucky and is often highly resented. It is not true, however, that they connect the Storm Petrel necessarily with bad weather.

The Storm Petrel breeds in holes or cracks in the ground, usually in small islands; sometimes a slight nest is made, sometimes the single white egg, often faintly spotted with reddish dots, is laid on the bare ground. During the time of incubation the Petrels are nocturnal in their habits and are seldom seen during the daytime.

Genus II. OCEANODROMA.

Type.

- Oceanodroma*, Reichenb., Av. Syst. Nat. p. lxxxvii.
(1849) *O. furcata*.

Resembling *Procellaria*, but with a slightly shorter tarsus, which is equal to, or even shorter than the middle toe and claw, and with a markedly forked tail.

The members of this genus are chiefly confined to the sea of the northern hemisphere; a single example of one species only has been met with in South African Seas.

783. *Oceanodroma leucorrhœa*. Leach's Forked-tail Petrel.

Procellaria leucorrhœa, Vieill., N. Dict. d'Hist. Nat. xxv, p. 422 (1817)
Shelley, B. Afr. i, p. 166 (1896).

Thalassodroma leucorrhœa, Dresser, B. Eur. viii, p. 497, pl. 613, fig. 2
(1874).

Oceanodroma leucorrhœa, Salvin, Cat. B. M. xxv, p. 348 (1896); Reichenow, Vög. Afr. i, p. 33 (1900).

Description. Adult.—General colour sooty-black, with a leaden tinge on the head and throat; the wings and tail darker, the extreme bases of the rectrices white; lower upper tail-coverts white with brown shafts and narrow margins; below sooty-brown throughout. Bill and feet black.

Length about 8·8; wing 6·10; tail 3·20; culmen 0·70; tarsus 1·0; middle toe 0·98.

Sexes alike; young covered with sooty down. This bird can be at once distinguished from the Stormy Petrel by its forked tail and longer middle toe.

Distribution.—Though apparently rather rarer than the Storm Petrel, Leach's Petrel has a wider distribution, being found throughout the North Atlantic from Virginia and Greenland to Western Europe, and the North Pacific from California to Japan. There is an example in the British Museum from South Africa, obtained by Sir A. Smith many years ago. This is the only South African record, so far as I am aware.

Subfamily II. PUFFININÆ.

Nostrils united externally, or nearly so, above the culmen; margin of the sternum uneven; basipterygoid processes present; ambiens muscle and cæca present; first primary the longest, or not shorter than the second.

Genus I. PUFFINUS.

Type.

Puffinus, Brisson, *Orn.* vi, p. 131 (1760) *P. kuhli*.

Bill compressed and slender, about as long as the head, strongly hooked, both mandibles being turned down at the tips; nostril tube short, about a quarter the length of the bill; openings separated by a well-marked septum and directed forwards and upwards; wings long and pointed, first primary the longest; tail of twelve feathers, graduated and rounded; tarsus somewhat slender, the anterior edge sharp in front, covered with small hexagonal plates, and shorter than the middle or outer toe, which are nearly equal; hind claw distinct but very small.

This is a large genus containing some twenty-five species of birds, generally known as Shearwaters; they must not be confused with the bird known as the Puffin in England, which is allied to the Auks, a group not represented in South Africa. The Shearwaters are generally distributed throughout the seas of the whole world. Although four species are here included as having been found about the South African Coast, none of them are at all common or have been met with more than once or twice.

Key of the Species.

- A. Below white.
- a. Larger; wing 12·5 and upwards.
 - a¹. Colours of the sides of the neck distinctly defined, flanks spotted, middle of the abdomen dusky..... *P. gravis*, p. 468.
 - b¹. Sides of the neck mottled; flanks and middle of the abdomen white..... *P. kuhli*, p. 469.
 - b. Smaller; wing 9·0 or under; primaries white below on the inner edge of the inner web
- B. Plumage generally sooty; wing about 12·0; bill dark
- P. assimilis*, p. 470.
- P. griseus*, p. 471.

784. **Puffinus gravis.** Great Shearwater.

Procellaria gravis, O'Reilly, *Voy. to Greenl.* p. 140, pl. 12, fig. 1 (1818), *Procellaria major*, Faber, *Prod. Isl. Orn.* p. 56 (1822).

Puffinus major, Gurney, in Andersson's *B. Damaral.* p. 350 (1872); Dresser, *B. Eur.* viii, p. 527, pl. 616 (1877); Swinburne, *P. R. Phys. Soc. Edin.* ix, p. 196 (1886).

Puffinis gravis, Salvin, *Cat. B. M.* xxv, p. 373 (1896); Shelley, *B. Afr.* p. 166 (1896); Reichenow, *Vög. Afr.* i, p. 29 (1900).

Description. *Adult.*—Above brown, darkest on the head, paler on the neck, most of the feathers of the body edged with paler, primaries and rectrices darker brown, the former white towards the base, the longer upper tail-coverts with white tips; below white flecked with sooty on the middle of the abdomen and under tail-coverts and spotted on the flanks with the same colour; under wing-coverts streaked with brown.

Bill dark horn; tarsi and toes yellow, darker outwardly.

Length 21·0; wing 12·0; tail 4·50; tarsus 2·20; culmen 2·25.

Distribution.—The Great Shearwater is found throughout the Atlantic from Greenland southwards to the Falkland Islands and the Cape seas. Andersson states that it is common in the Cape seas, especially north of the Orange River, but there does not appear to have been an example in his collections. Swinburne has noticed it from 40° S. lat. to the Cape and beyond 45° S. lat.

There is a specimen in the South African Museum from Inaccessible Island, one of the Tristan group, and there are two in the British Museum from the "Cape of Good Hope."

Habits.—Shearwaters are found generally within no great distance from the land, though seldom resorting thereto except in the breeding season; they fly well without apparent effort, though at times they flap their primaries; when alighting this species strikes the water with great violence, hence the vernacular name, and then dives, pursuing its prey under water with considerable rapidity and often tearing the bait from the fishermen's hooks; their food consists chiefly of cuttle-fish, though any animal substance is greedily swallowed. Nothing is known of their nidification, but as they appear to be in the Northern Hemisphere only from about May to October, they probably resort to some of the islands in the Southern Ocean for this purpose.

785. *Puffinus kuhlii*. *Mediterranean Shearwater.*•

Procellaria kuhlii, *Boie, Isis*, 1835, p. 257.

Puffinus kuhlii, *Pelzeln, Novara Reise, Vögel*, p. 142 (1865); *Dresser, B. Eur.* viii, p. 513, pl. 615 (1877); *Salvin, Cat. B. M.* xxv, p. 375 (1896); *Shelley, B. Afr.* i, p. 166 (1896).

Description. *Adult.*—Above brown, darker on the head, the feathers of the back with paler edges; the longer upper tail-coverts whitish or mottled; wings and tail darker brown than the back;

below white; the cheeks and sides of the neck grey, mottled with white; under tail-coverts white, mottled at the edges; axillaries and under wing-coverts white; the edge of the wing dark brown.

Bill yellow, tip yellowish-horn; tarsi and toes yellow, darker outwardly.

Length about 18·5; wing 13·0; tail 4·75; culmen 2·10; tarsus 1·86; middle toe 2·2.

Distribution.—The Mediterranean Shearwater is common in the sea from which it takes its name; it is also found throughout the Atlantic from the coasts of Massachusetts and the Canaries and Madeira southwards, and extends into the Southern Ocean as far as Kerguelen at any rate, where examples were obtained by the "Transit of Venus" Expedition.

This Shearwater breeds on various small islands in the Mediterranean and also in the Salvages Isles and the Canaries.

The Novara Expedition obtained two examples of this bird in September, 1857, at sea, to the west of the Cape of Good Hope in 36° S. lat., 5° E. long., and 35° S. lat., 7° E. long. respectively. This is the only definite occurrence of the species in South African waters which I have found recorded.

786. *Puffinus assimilis*. *Gould's Little Shearwater.*

Puffinus assimilis, Gould, P. Z. S. 1837, p. 156; id. *Bds. Australia*, vii, pl. 59 (1848); Salvin, Cat. B. M. xxv, p. 384 (1896); Shelley, *Bds. Afr.* i, p. 167 (1896).

Description. *Adult.*—General colour above slaty-black; the bluish tinge most marked on the back of the neck; below, including the lower half of the face and sides of the neck white throughout; a patch of slaty-blue on either side of the breast; under wing-coverts and the inner half of the inner web of the primaries below white.

Bill, basal half blue, distal half and nasal tubes black; legs blackish; the webs between the toes yellowish.

Length about 11·0; wing 7·0; tail 3·0; culmen 1·1; tarsus 1·4; middle toe 1·6.

Sexes alike.

Distribution.—This Shearwater was first described by Gould from specimens obtained on the coast of New South Wales. It is found throughout the Australian and New Zealand seas, extending

to the Fijis, Phoenix Island and St. Ambrose in the Pacific, and to the Salvages and Madeira in the Atlantic.

It nests on the Fiji, Kermadec and St. Ambrose Islands in the Pacific and on the Desertas near Madeira, the Great Salvages between Madeira and the Canaries, the Cape Verd Islands and Gough Island in the Atlantic.

In the South African Museum there is a single mounted specimen obtained by Mr. Layard during his voyage in H.M.S. "Castor" in the South Atlantic. This is the only record, so far as I am aware, of its occurrence within our limits.

787. *Puffinus griseus*. Sooty Shearwater.

Procellaria grisea, *Gmel. Syst. Nat.* i, p. 564 (1788).

? *Puffinus cinereus*, *Smith, Illustr. Zool. S. Afr. Aves*, pl. 56 (1840).

Puffinus griseus, *Dresser, B. Eur.* viii, p. 523, pl. 616; *Swinburne, P. R. Phys. Soc. Edin.* ix, p. 197 (1886); *Salvin, Cat. B. M.* xxv, p. 386 (1896); *Shelley, B. Afr.* i, p. 167 (1896); *Reichenow, Vög. Afr.* i, p. 29 (1900).

Description. Adult.—General colour sooty-brown, darker on the head, lower back, wings and tail; feathers of the back indistinctly edged with paler; greater coverts and under surface greyer and paler; under wing-coverts greyish-white with darker shafts.

Bill horn; feet dark hazel.

Length about 18·0; wing 12·0; tail, central feathers 3·5, lateral feathers 2·7; bill 2·1; tarsus 2·4; middle toe 2·6.

Sexes alike.

Distribution.—The Sooty Shearwater has a very wide range, being found throughout the seas of both Hemispheres from the Faroe Islands of the North Atlantic and the Kurile Isles of the North Pacific, southwards to the Straits of Magellan and the New Zealand seas.

Its breeding haunts appear to be confined to the Southern Hemisphere, where it has been observed nesting in the Chatham Islands by Mr. Travers, and on other islands off the New Zealand coast. Owing to the idea for many years prevalent that this bird was either a dark form or a young bird of the Greater Shearwater, a certain amount of confusion has arisen in regard to it. There is, however, an example in the British Museum from South Africa, and it seems probable that the bird figured by Smith, on plate 56 of his work, is referable to the present species.

Genus II. PRIOFINUS.

Type.

- Priofinus*, Hombr. & Jacq. *Compt. Rend.* xviii, p. 355
 (1844) *P. cinereus*.

This genus closely resembles *Puffinus*, differing only in the shape of the nasal tubes ; these are somewhat higher and slightly swollen at the orifices, and open forwards and slightly inwards but not upwards, so that from above they are hardly visible.

One species only is assigned to this genus ; it is found throughout the Southern Ocean.

788. *Priofinus cinereus*. Great Grey Petrel.

- Procellaria cinerea*, Gmel. *Syst. Nat.* i, p. 563 (1788) ; *Sperling, Ibis*, 1868, p. 293 ; *Reichenow, Vög. Afr.* i, p. 25 (1900).
Procellaria hæsitata (ncc Kuhl), Gould, *B. Austr.* vii, pl. 47 (1848) ; *Hutton, Ibis*, 1869, p. 352.
Adamastor cinereus, Saunders, *P. Z. S.* 1880, p. 164 ; *Green, Ocean Birds*, p. 27 (1887).
Priofinus cinereus, Salvin, *Cat. B. M.* xxv, p. 390 (1896) ; Shelley, *B. Afr.* i, p. 167 (1896) ; Sharpe, *Southern Cross Exped.* p. 142 (1902).

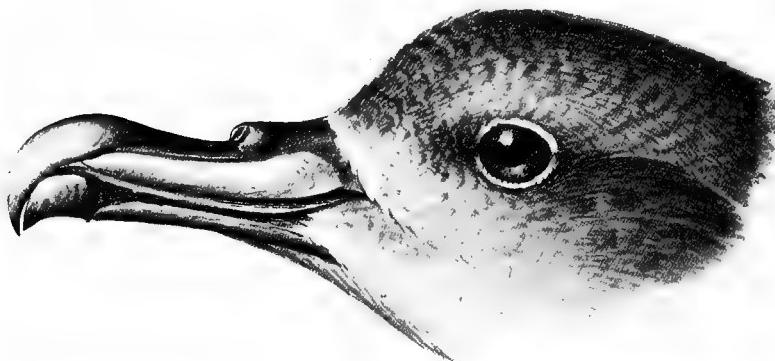


FIG. 146.—Head of *Priofinus cinereus*. $\times \frac{7}{8}$

Description. *Adult.*—Above French grey, darker on the head, wings and tail ; feathers of the back and rump with dark brown shaft-marks ; below white ; the sides of the face and neck pale grey ;

some feathers on the flanks, under wing coverts and some of the under tail-coverts grey.

Iris dark brown; bill greenish-yellow, the nostrils and culmen black, mandible greenish-horn, the lines of division black; tarsi and toes bluish-brown, the outer toe darker, the webs with a yellow tinge.

Length (in flesh) 18·0; wing 12·75; tail 4·25; tarsus 2·20; middle toe 2·40; culmen 2·05.

Distribution.—The Great Grey Petrel is found throughout the Southern Ocean and is generally distributed between the 30th and 55th parallels of South latitude. It was found breeding on Round Island near Mauritius many years ago by Mr. Layard, and is stated to nest on Kerguelen by Captain Hutton (*Ibis*, 1865, p. 286) but it has not been noticed since by the Transit of Venus Expedition or by Mr. Hall.

This Petrel is not uncommon in the Cape Seas; Captain Hutton obtained it in April, 1866, in 36° S. lat., 2° E. long., and in 35° S. lat., 15° E. long.; Lord Lindsay on September 21, in 35° S. lat., 9° E. long., and the Southern Cross Expedition in 42° S. lat., 20° E. long., while there is an example in the South African Museum, a female obtained in September, 1903, by Captain Turbyne of the S.S. "Pieter Faure," about forty miles west of Cape Point.

Genus III. **PRIOCELLA.**

Type.

Priocella, Hombr. & Jacq. *Compt. Rend.* xviii,
p. 357 (1844) *P. glacialisoides*.

This genus is closely allied to *Puffinus*, but the nasal tube is longer, about one-third of the length of the bill and opens forwardly; there are fourteen tail-feathers instead of twelve.

Only one species, found throughout the Southern Ocean, is assigned to this genus.

789. **Priocella glacialisoides.** *Silver-grey Petrel.*

Procellaria glacialisoides, Smith, *Ill. Zool. S. Afr. Aves*, pl. 51 (1840);
Layard, B. S. Afr. p. 361 (1867).

Thalassœca tenuirostris (*nec Temm.*), Sharpe, ed. *Layard's B. S. Afr.*
p. 767 (1884).

Priocella glacialisoides, Salvin, *Cat. B. M.* xxv, p. 393 (1896); Shelley,
B. Afr. i, p. 167 (1896); Parkin, *Ibis*, 1900, p. 675; Reichenow, *Vög.
Afr.* i, p. 27 (1900); Vanhöffen, *Journ. Ornith.* 1901, p. 310.

Description. *Adult.*—Above pale grey, paler on the head and back of the neck ; quills greyish-black outwardly ; a dark spot in front of the eye ; forehead, cheeks and entire under surface white ; flanks washed with pale grey ; under wing-coverts and axillaries pure white ; tail pale grey.

Iris brown ; bill yellow, the tip, middle of the culmen, nasal covers and base of maxilla black ; legs pale flesh colour, the outer toe darker.

Length about 18·0 ; wing 12·6 ; tail with fourteen feathers, 5·1 ; culmen 2·1 ; tarsus 1·8 ; middle toe 2·4. Sexes alike.

Distribution.—This Petrel is another of those, the headquarters of which are in the Great Southern Ocean. In the Pacific, however, it wanders up the coast of America as far north as Washington Territory, and in the Atlantic as far as St. Helena, while to the southward it reaches the Antarctic pack ice. Kerguelen Island is said to be a breeding place, but no properly authenticated eggs appear to have been hitherto obtained.

Sir Andrew Smith, who first discriminated this Petrel, stated that it frequented the African coast, and frequently entered the bays for the purpose of obtaining food. This observation has hardly been confirmed by later authorities, as Layard never obtained a specimen, nor is there one in the South African Museum. It has been recently identified at sea by Mr. Parkin in 39° S. lat., 8° E. long., in December, while Professor Vanhoffen met with it in November between Cape Town and the Bouvet Islands during the voyage of the S.S “Valdivia” of the German Deep-Sea Expedition.

Genus IV. MAJAQUEUS.

Type.

- Majaqueus**, Reichenb. *Natiürl. Syst. Vög.* p. iv,
(1852)..... M. æquinoctialis.

Bill stout and strong, the hook occupying at least half its length, chiefly yellow in colour ; lower mandible with a groove dividing it plainly into an upper and lower piece ; nasal tube broad and short, about a quarter of the length of the culmen, opening appearing almost single as the broad septum is well within it, openings directed forwards and inwards ; wings moderate, first and second primaries subequal ; tail of twelve feathers somewhat graduated ; tarsus considerably shorter than the middle and outer toes, more

or less rounded in front; hind toe small, claw sharp; plumage sooty-black.

The species of this genus, two in number, are confined to the Southern Ocean.

790. *Majaqueus æquinoctialis*. *Cape Hen.*

Procellaria æquinoctialis, Linn. *Syst. Nat.* i, p. 213 (1766); *Grill*, *K. Vet. Akad. Handl.* ii, no. 10, p. 59 (1858); *Layard*, *Ibis*, 1862, p. 97, 1863, p. 249, 1867, p. 459; *id.* *B. S. Afr.* p. 360 (1867); *Reichenow*, *Vög. Afr.* i, p. 24 (1900); *Vanhöffen*, *Journ. Ornith.* 1901, p. 307.

Procellaria conspicillata, *Gould*, *B. Austr.* vii, pl. 46 (1848).

Majaqueus æquinoctialis, *Swinburne*, *Proc. R. Phys. Soc. Edin.* ix, p. 198 (1886); *Sharpe*, *ed. Layard's B. S. Afr.* p. 766 (1884); *Salvin*, *Cat. B. M.* xxv, p. 395 (1896); *Shelley*, *B. Afr.* i, p. 167 (1896); *Shortridge*, *Ibis*, 1904, p. 203.

"Black Haglet," "Black Night Hawk," "Stinkpot," and "Stinker," of Sealers and Whalers.

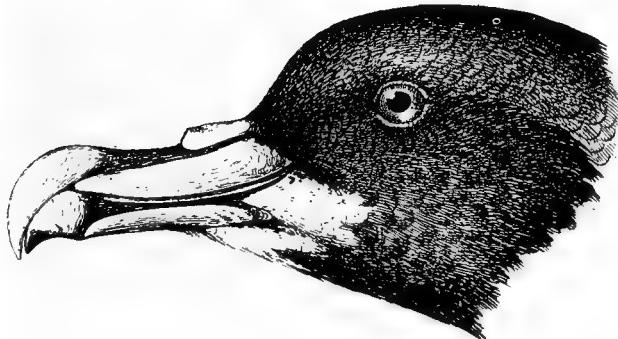


FIG. 147.—Head of *Majaqueus æquinoctialis*. $\times \frac{2}{3}$

Description. Adult.—General colour throughout sooty-black, slightly paler and browner below, in the middle of the back, and on the wing-coverts; a patch of white on the chin reaching usually to below the eye; basal halves of the shafts of the primaries white.

Iris hazel; bill greenish-horn, the tip of the mandible, the membrane dividing the various portions of the sheath of the bill and the flat space on the culmen in front of the nostrils black; legs and feet black, sometimes with a pinkish or yellowish tinge on the webs.

Length (in the flesh) 21·5; wing 14·50; tail 5·25; culmen 1·65; tarsus 2·5; middle toe 3·0. Nestlings are covered with slaty-grey down and the chin patch is not assumed till later.

The amount of white on the throat and cheeks varies considerably with different individuals, even from the same localities; as a rule it is most developed in Australian examples, where a band of white extends right across the forehead. These have been considered to represent a distinct species.

Distribution.—The Cape Hen is found throughout the Southern Ocean, including the coasts of South Africa, Tasmania, New Zealand and Chili. It is one of the commonest birds in Table Bay, and has been found northwards as far as Great Fish Bay, near the southern border of Angola, in about 17° S. lat., where it was met with by Professor Vanhoffen, the naturalist of the German Deep-Sea Expedition. In the other direction Mr. Brown tells me it is not uncommon in Algoa Bay, while Mr. Swinburne has frequently observed it in the roadsteads of East London and Durban. North of this it was noticed by Peters on the Mozambique coast, according to Finsch and Hartlaub.

Habits.—One of the commonest birds about the South African coasts, though not, as a rule, seen except at sea, the Cape Hen can be always at once recognised by the white patch on its chin. It is resident on our coasts throughout the greater part of the year, though the majority of the birds leave our shores in December and January for breeding purposes.

The flight is very Albatros-like and a pair may be watched for some time sweeping to and fro across the wake of a vessel without any appreciable movement of the wings, which appear to keep perfectly horizontal until the turn is made, when the one tip is depressed and points straight downwards and the other points straight up to the sky. Occasionally they settle on the water to pick up refuse thrown from the ship, and when rising flap their wings slightly in order to get under way again. The natural food consists of cuttle fish, the beaks of which are frequently to be found in their stomachs, and fishes. Hall states that they also eat kelp or seaweed, as he found traces of this in their stomachs. Like other Petrels the Cape Hen has a very strong odour of a somewhat musky character.

Kerguelen and the Crozet Islands are the best known breeding haunts of this Petrel. Kidder, Moseley, Eaton and Hall have all given accounts of its nidification. A long burrow, from two

to three yards in length, is made in the hillside, generally in a very damp spot, often with a small cascade running over the entrance. The tunnel ends in a larger chamber in the centre of which is a nest built up like an inverted saucer with a depression at the top, the floor of the chamber being frequently covered with water. Here, usually in January, a single egg is laid ; this is oval, almost equally pointed at each end, white and smooth, but not glistening, and measures about $3\cdot2 \times 2\cdot1$. Both male and female appear to take part in incubation, the male during the day, the female at night. When dug out of the nest the bird utters a prolonged and high pitched cry, and often inflicts a nasty wound with its beak.

There are eggs of this bird in the South African Museum from the Crozet Islands, obtained many years ago from Captain Armson.

Genus V. **ŒSTRELATA.**

Type.

Œstrelata, Bp. *Consp. Av.* ii, p. 188 (1856) *Œ. hæsitata*.

Bill rather shorter than the head but very strongly hooked, the unguis forming more than half the bill, which is generally black throughout ; nasal tube very short, less than a quarter the length of the culmen ; opening as in *Majaqueus*, directed forwards and inwards ; wing moderate, first and second primaries subequal ; tail of twelve feathers slightly graduated ; tarsus much shorter than the middle toe and claw, covered with hexagonal scales ; hind toe small.

This is a large genus, containing some thirty species found principally in the tropical and temperate portions of the Oceans of the Southern Hemisphere but occasionally wandering north of the Line as far as the British Isles and Japan. Four species have been met with in Cape Seas and it is quite probable that others may occasionally occur there.

Key of the Species.

- A. Plumage sooty black throughout *Œ. macroptera*, p. 478.
- B. Below more or less white.
 - a. Head except the region round the eye white... *Œ. lessoni*, p. 479.
 - b. Crown more or less dark.
 - a¹. Forehead, throat and neck dark like the back... *Œ. incerta*, p. 480.
 - b¹. Forehead, throat and neck more or less white *Œ. mollis*, p. 481.

791. **Œstrelata macroptera.** *Long-winged Petrel.*

Procellaria fuliginosa, (nec Gmel.) Kuhl, Beitr. p. 142 (1820).

Procellaria macroptera, Smith, Ill. Zool. S. Afr. Aves, pl. 52 (1840); Layard, B. S. Afr. p. 360 (1867); id. Ibis, 1867, p. 460; Butler, Feilden and Reid, Zool, 1882, p. 428.

Procellaria atlantica, Gould, Ann. Mag. N. H. xiii, p. 362 (1844); Grill, K. Vet. Akad. Handl. ii, no. 10, p. 59 (1858).

Œstrelata macroptera, Sharpe, ed. Layard's B. S. Afr. p. 766 (1884); Swinburne, P. R. Phys. Soc. Edin. ix, p. 198 (1886); Salvin, Cat. B. M. xxv, p. 399 (1896); Shelley, B. Afr. i, p. 167 (1896); Reichenow Vög. Afr. i, p. 26 (1900); Shortridge, Ibis, 1904, p. 204.

"Cape Parson" of Sailors in allusion to its dusky plumage.

Description.—*Adult.*—General colour above and below sooty black, darkest on the back and wings; a little paler on the crown and below; most of the feathers both above and below with paler and in some cases white concealed bases.

Iris grey-black; bill and legs black.

Length (in flesh) 16·25; wing 12·0; tail 4·5; culmen 1·6; tarsus 1·7; middle toe 2·0.

Distribution.—This Petrel is found throughout the Southern Ocean between about the 30th and 50th parallels. It is met with on the coasts of Southern Africa and of New Zealand, but I have not been able to find a reference to its occurrence on the South American Coast or in the Southern Pacific.

The Long-winged Petrel is not uncommon in the seas around Cape Colony. Victorin met with it in 33° S. lat. 17° E. long. not far from Table Bay, and Swinburne states that he saw a pair off Duiker Point about twelve miles south of Cape Town. Mr. Brown tells me he has met with only one example; this was a wounded bird and was found in a garden in Port Elizabeth. Further east at Port St. John's, Mr. Shortridge states they are sometimes blown ashore after a heavy gale and two specimens obtained in June in this manner are now preserved in the South African Museum in addition to a third shot forty miles west of Cape Point in August by Capt. Turbyne, of the Government Steam Trawler, "Pieter Faure." Capt. Reid observed this Petrel in the Durban roadstead in December.

Habits.—Little has been noticed of special interest about the habits of the Long-winged Petrel. Capt. Hutton likened it when on the wing to a huge Swift, while Smith remarked that it was a rare bird in the Cape seas and generally flew low near the surface

of the water. It breeds on the Crozet Islands, whence eggs were brought by Capt. Arsmson to Mr. Layard; one of these is still preserved in the South African Museum. It is very like that of the Cape Hen but smaller and somewhat more rounded, measuring $2\cdot7 \times 1\cdot9$; the colour is white and the texture smooth but not very glossy.

Mr. R. Hall (*Ibis*, 1900, p. 24) met with this bird in considerable numbers on Kerguelen but he did not find any eggs or nests, although the birds appear to occupy burrows on the higher ground about the beach. He states that they are preyed on considerably by the Skuas and suffer a good deal of persecution. He found nine dead birds lying on the beach.

792. **Œstrelata lessoni.** *Lesson's Petrel.*

Procellaria lessoni, *Garnot, Ann. Sci. Nat.* vii, p. 54 (1826); *Hutton, Ibis*, 1867, p. 188.

Œstrelata lessoni, *Salvin, Cat. B. M.* xxv, p. 401 (1896); *Shelley, B. Afr.* i, p. 167 (1896); *Reichenow, Vög. Afr.* i, p. 26 (1900).

"White Night Hawk" or "Mutton Bird," of Kerguelen whalers.

Description. *Adult.*—Upper surface grey, darker on the rump and becoming gradually whiter on the crown which is nearly pure white; feathers of the back edged with paler; nape and sides of the neck transversely mottled pale grey and white; wings and wing-coverts nearly black; upper tail-coverts and central tail-feathers pale grey, lateral ones nearly white; forehead and entire under surface pure white, region in front of and below the eye black; under wing-coverts dark grey, each feather edged with white; quills grey below, white on the concealed portions of the base.

Iris black; bill black; tarsi yellow; distal portion of the toes and webs and the outer toe dark, the rest yellow.

Length about 18·0; wing 12·2; tail 5·0; bill 1·9; tarsus 1·8; middle toe 2·4.

Distribution.—Lesson's Petrel is found throughout the Southern Ocean, including the coasts of New Zealand, Australia and South Africa. There is an example in the British Museum presented by Sir G. Grey from 36° S. lat., 10° E. long., which is not very far from the Cape, while Hutton noted an example in 36° S. lat., 2° E. long. a good many years ago when on a voyage to New Zealand. There is no specimen of it in the South African Museum.

Habits.—Lesson's Petrel can be easily recognised when it is seen by its white head which forms a strong contrast to its dark wings ; it is a bird of very powerful flight, in this respect far exceeding any of its congeners according to Gould. It feeds chiefly on cuttle-fishes, the little horny beaks of which are almost always found in its stomach.

As is the case with so many other Petrels, it returns to Kerguelen to nest, where its eggs have been found by the Transit of Venus and Challenger Expeditions, and more recently by Mr. Hall. The single egg is white and measures about $2\cdot85 \times 2\cdot0$; it is laid in a rounded chamber at the end of a short burrow, about the size of that of a rabbit. This, unlike that of the Cape Hen, is always on dry ground and may be placed at any elevation from the shore level to 300 feet. The old birds are very savage when molested and utter a very loud, shrill cry, both then and at other times.

793. **Œstrelata incerta.** *Schlegel's Petrel.*

Procellaria incerta, Schleg. *Mus. P. B.* vi, *Procell.* p. 9 (1863).

Œstrelata incerta, Salvin, *Cat. B. M.* xxv, p. 405 (1896); Shelley, *B. Afr.* i, p. 167 (1896); Reichenow, *Vög Afr.* i, p. 26 (1900); Parkin, *Ibis*, 1900, p. 675.

Description. *Adult.*—Above brown, darker on the rump, paler on the back of the neck, the feathers of the back and the wing-coverts edged with a paler shade; sides of the neck and breast pale greyish brown, the middle of the throat nearly white; flanks, under tail-coverts, axillaries and quills dark brown.

Bill black; tarsus and proximal half of the toes and webs yellow, remainder of the latter blackish.

Length about 17·5; wing 12·5; tail 5·5; bill 2·0; tarsus 1·7; middle toe 2·4.

Distribution.—This rare Petrel has only been found in the South Atlantic, near the South African coast. There are three examples in the British Museum, all from Cape seas, obtained in 36° S. lat. 10° E. long., in August, in 39° S. lat. 9° E. long., in September, and in 39° S. lat. 8° E. long. in December. This species is not represented in the South African Museum.

794. *Œstrelata mollis.* *Soft-plumaged Petrel.*

Procellaria mollis, *Gould*, *Ann. Mag. N. H.* xiii, p. 363 (1844); *id. B. Austr.* vii, pl. 50 (1848).

Œstrelata mollis, *Sharpe*, *ed. Layard's B. S. Afr.* p. 766 (1884); *Salvin*, *Cat. B. M.* xxv, p. 406 (1896); *Shelley*, *B. Afr.* i, p. 167 (1896); *Reichenow*, *Vög. Afr.* i, p. 27 (1900); *Parke*, *Ibis*, 1900, p. 675; *Shortridge*, *Ibis*, 1904, p. 204.

Description. *Adult.* — General colour above slaty-grey, rather darker on the head and wings which are almost black; tail like the back, the lateral feathers slightly freckled with white; forehead and lores mottled with white; a black patch in front of and below the eye; sides of the neck and cheeks freckled grey and white; below white throughout with a band of slaty-grey, sometimes not quite complete across the chest; under wing-coverts and under surface of the wing-quills very dark brown; under tail-coverts very long, reaching the end of the tail-feathers.



FIG. 148.—Head of *Œstrelata mollis.* $\times \frac{11}{12}$

Iris and bill black; tarsus and proximal portion of the toes flesh-coloured, distal portion and webs black.

Length (in flesh) 14·0; wing 10·0; tail 4·5; culmen 1·4; tarsus 1·3; middle toe 1·56.

Distribution. — The Soft-plumaged Petrel is found throughout the Southern Ocean down to about the 50th parallel; in the Atlantic it crosses the line and is found as far north as Madeira.

This Petrel is not uncommon in the Cape seas, especially off the south-eastern coast of Cape Colony. In the South African Museum there is an old mounted example obtained by Mr. Layard in 31° S. lat. 26° E. long., off the coast of Pondoland, as well as a pair recently obtained, in June, 1902, at Port St. John's, by Mr.

Shortridge, who states that these birds occasionally collect there on the sea shore in flocks after rough weather. Other examples from Cape seas are recorded by Layard, Hutton, Parkin and the Southern Cross Expedition.

Habits.—This Petrel is a bird of rapid and graceful flight and is usually seen in small companies. It is seldom met with near the coast except after very rough weather. The only definitely recorded breeding place is in New Caledonia, where Mr. Layard found it nesting near the summit of Mount Mou.

Genus VI. OSSIFRAGA.

Type.

- Ossifraga**, Hombr. & Jacq., Compt. Rend. xviii, p. 356
 (1844) *O. gigantea*.

Bill stout and strong about as long as the head ; a few lamellæ along the sides of the palate, the tip of the lower mandible slightly upturned, forming an angle at the gonys ; nasal tube long and strong about half the length of the bill with a single opening forwardly directed, the septum not reaching the aperture ; space between the rami of the lower jaw feathered in the centre but leaving a bare space on either side ; wing comparatively short, not reaching the tail tip, secondaries usually twenty-nine in number ; tail very short, slightly rounded and consisting of sixteen feathers ; tarsus short, about equal to the two basal joints of the middle toe, claw of hind toe well-developed ; size very large ; plumage sooty brown or black.

This genus, containing only a single species, is found throughout the Southern Ocean.

795. *Ossifraga gigantea*. Giant Petrel.

Procellaria gigantea, Gmel., Syst. Nat. i, p. 563 (1788) ; Gould, B. Austr. vii, pl. 45 (1848) ; Layard, Ibis, 1862, p. 97, 1867, p. 458 ; id. B. S. Afr. p. 360 (1867) ; Sperling, Ibis, 1868, p. 293 ; Swinburne, P. R. Phys. Soc. Edin. ix, p. 197 (1886).

Ossifraga gigantea, Gurney, in Andersson's B. Damaral. p. 354 (1872) ; Sharpe, ed. Layard's B. S. Afr. p. 765 (1884) ; Green, Ocean Birds, p. 25, pl. v. (1887) ; Salvin, Cat. B. M. xxv, p. 422 (1896) ; Shelley, B. Afr. i, p. 168 (1896) ; Reichenow, Vög. Afr. i, p. 24 (1900) ; Vanhoffen, Journ. Ornith., 1901, p. 309.

"Nelly," sometimes "Leopard Bird" of Sailors, "Glutton Bird" of Sealers.

Description. *Adult male.*—Uniform chocolate-brown throughout, the centres of the feathers rather darker than the edges; below often a little paler than above.

Iris hazel; bill pale sea green; legs brownish-black.

Length 36·0 (a female measured in the flesh 33·0); wing 20·0; tail 6·5; culmen 5·0; tarsus 3·5; middle toe 5·0.

The sexes are alike, the young birds paler than the adults; the size of the bill varies a good deal; in two examples in the South African Museum the culmen only measures 3·75, as against the more usual 5·0.

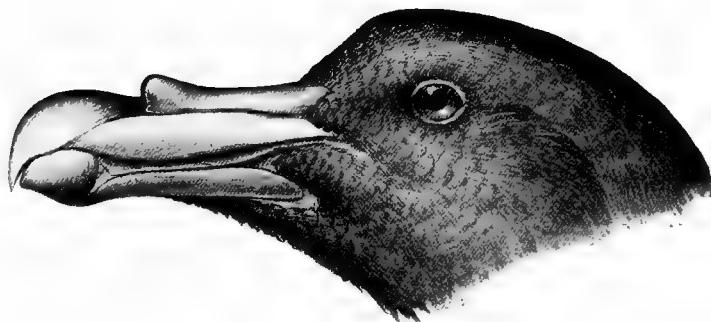


FIG. 149.—Head of *Ossifraga gigantea*. $\times \frac{1}{2}$

White and nearly white individuals are not uncommon. The nestling is covered with long grey down, when fledged they are dark brown mottled with white.

Distribution.—Throughout the Great Southern Ocean from about the Tropic of Capricorn to the Ice Barrier and the Antarctic Continent, where it was seen in considerable numbers by the members of the Southern Cross Expedition, the Giant Petrel appears to be everywhere abundant. Like other Petrels it resorts to oceanic Islands to nest and rear its young; among others the Falklands, South Georgia, Tristan da Cunha and Gough Island in the Atlantic, Prince Edward and the Crozet Islands, and Kerguelen in the Indian Ocean, may be mentioned as breeding places.

The Giant Petrel is found about the South African coasts during the greater part of the year; it is common enough in Table Bay, and has been obtained on the western coast as far north as Mossamedes in 15° S. lat.

Mr. Brown informs me that it is not uncommon about Algoa Bay, and Swinburne has seen it frequently about the roadsteads at East London and Durban. According to Hartlaub it has been taken as far north as the Island of Bourbon.

There is a good series of examples in the South African Museum, all from Table Bay or near by, obtained in the months of May and August.

Habits.—The Giant Petrel, though inferior in size to the Wandering Albatros, is a large bird measuring about eight feet across from tip to tip of the wings: neither is it so powerful in flight as the Albatros; it frequently follows a ship to pick up scraps of offal, and is often to be seen about Table Bay and other South African roadsteads looking out for food, but it never, so far as I know, voluntarily comes to the beach or land in South Africa. The Giant Petrel preys principally on scraps and carrion, but it also seems to attack and devour other smaller birds, such as the Prions. The stomach of one recently brought to the Museum in the flesh contained the beaks of what was undoubtedly a species of this genus.

Sperling specially remarks on the "diabolical croak" of this bird often heard at sea during the night. It is not as a rule so easily caught with a hook and line, as the Albatros.

As already stated the Giant Petrel breeds on the Islands of the Southern Ocean; Kidder (Bull. U. S. Nat. Mus. No. 3), and Hall (*Ibis*, 1900, p. 25), have perhaps given the best accounts of the nesting habits as observed by them on Kerguelen. A single egg is laid in the open (not in a burrow), among the tufts of Azorella plants, of which a rough nest is made; there are usually a number of nests together, forming a rookery, which is placed at a considerable elevation some way from the beach. When approached or frightened they vomit a disgusting mass of oily fluid and undigested food from their stomach, projecting it for a distance of several feet. They do not take to flight on land, but make at once for the water on foot and start flying from thence. As soon as a seal is killed, the "Glutton-birds," as the sealers call them, rapidly assemble and gorge themselves on the blubber and flesh. They have a peculiar musky and very disagreeable odour which clings to them for some time.

Two eggs in the South African Museum, brought to Mr. Layard by Capt. Armonson, are very nearly true ovals, rather rough and granulated in texture and white in colour without any trace of gloss; they measure 4·10 × 2·75.

Genus VII. DAPTION.

*Type.***Daption**, *Steph. in Shaw's Gen. Zool.* xiii, p. 239 (1825)...*D. capensis*.

Bill rather short and weak, less than the length of the head; unguis less than half the bill, palate with a few lamellæ along the sides; nasal tube short, about one third of the length of the culmen with a single anteriorly directed opening, which, however, is divided within; space between the rami of the lower mandible bare; wings well developed, the first primary the longest; tail evenly rounded, of fourteen feathers; tarsus slender, covered with hexagonal scales, shorter than the middle toe; claw of hind toe small.

The well known Cape Pigeon is the only species of this genus; it is found throughout the Southern Ocean.

796. **Daption capensis.** *Cape Pigeon.*

Procellaria capensis, *Linn. Syst. Nat.* i. p. 213 (1766); *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 58 (1858); *Layard, B. S. Afr.* p. 361 (1867); *Sperling, Ibis*, 1872, p. 76.

Daption capensis, *Gould, B. Austr.* vii, pl. 53 (1847); *Layard, Ibis*, 1862, p. 97; *Gurney, in Andersson's B. Dammaral.* p. 353 (1872); *Sharpe, ed. Layard's B. S. Afr.* p. 767 (1884); *Swinburne, Proc. R. Phys. Soc. Edin.* ix, p. 198 (1886); *Green, Ocean Birds*, p. 32 (1887); *Salvin, Cat. B. M.* xxv, p. 428 (1896); *Shelley, B. Afr.* i, p. 168 (1896); *Reichenow, Vög. Afr.* i, p. 28 (1900); *Chun, Aus der Tiefen Weltm.* p. 185, with figure (1900).

Description. *Adult.*—Forehead, crown and sides of the face and neck slaty-black, rest of upper surface white, each feather tipped with slaty; primaries slaty, white on the concealed bases of both webs, except the first, which is only white on the inner web, lesser coverts slaty, others white edged with slate; tail white, broadly tipped with dusky black; below white, a few of the feathers on the chin and of the under tail-coverts tipped with slaty; inner under wing-coverts white, those towards the edge of the wing slaty; axillaries white, tipped with slate.

Iris dark brown; bill black, legs brownish black.

Length (in flesh) 14·0; wing 10·5; tail 4·0; culmen 1·3; tarsus 1·8; middle toe 1·95.

The nestlings in down are greyish above and greyish white below and have a black bill, according to Hall.

Distribution.—This, one of the most abundant and well known of all the Petrels, is spread over the whole of the Southern Ocean, reaching the Antarctic Ice Pack, where many examples were recently procured by the "Southern Cross" Expedition; its usual northerly limit is about the southern Tropic, but it has frequently been recorded from further north, even as far as the coasts of the United States and of the British Islands in the Atlantic, and the Ceylon coast in the Indian Ocean.

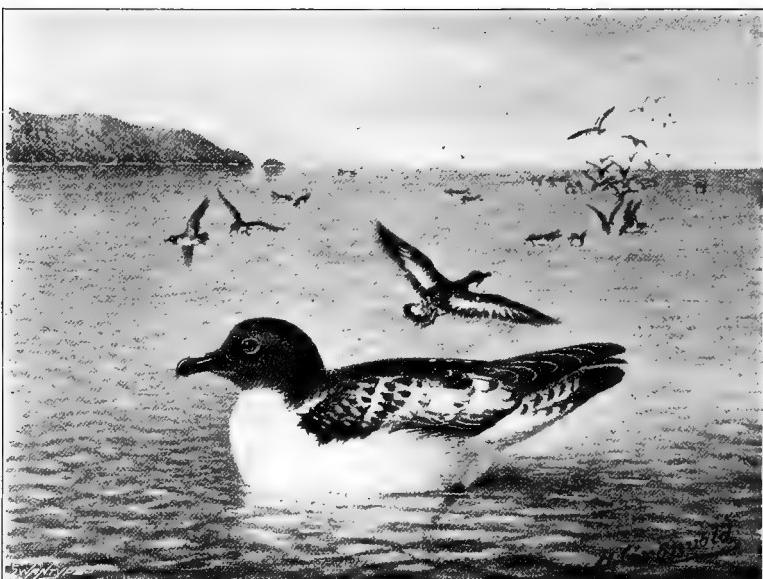


FIG. 150.—*Daption capensis*.

The Cape Pigeon is one of the commonest of the Petrels found in the Cape seas. It can be seen in Table Bay especially during the winter months, from April to November, but during the summer it departs southwards to breed. It occurs on the west coast up to the Great Fish Bay, and has been obtained at Mossamedes and Bengo Bay near St. Paul de Loando in Angola. To the east of Table Bay the Cape Pigeon is apparently a good deal less plentiful; both Rickard and Brown state that it is very rarely seen in Algoa Bay, and I have not heard of its occurrence off East London or Durban, though Capt. Sperling states that he has traced it up to

25° S. lat. on the East Coast of Africa. Examples in the South African Museum all from the neighbourhood of Table Bay have been obtained in the months of September and October.

Habits.—This Petrel can be at once distinguished from all others, even at a considerable distance, by its mottled back ; it can often be seen following ships, and it swims and dives with great facility ; it is very tame, and will come close alongside in order to obtain scraps, especially of a fatty nature, and is very easily secured with a hook and line or by hanging over the ship's side light threads in which it will entangle itself. When placed on the deck of a ship it cannot rise in the air, but waddles about with outstretched wings in a rather ridiculous manner, and generally throws up from its stomach a quantity of reddish oil. Its natural food seems to consist of fish and cuttle-fish ; bones of the former and beaks of the latter were among the contents of the stomachs of individuals examined in the flesh in the South African Museum.

Although this Petrel is so abundant and well known, it is only recently that authenticated eggs of it have been obtained. Mr. R. Hall (*Ibis*, 1900, p. 28) found four nests among the cliffs of Betsy Cove in Kerguelen on February 7 ; they were in small cavities or grottos about fifty feet above the sea level, and each contained one young bird partially covered with down ; the nests themselves were nothing more than hollows among the stones without any lining.

More recently the members of the Scottish Antarctic Expedition met with this bird breeding in the South Orkneys, and secured examples of their eggs. (*Nature*, vol. 71, p. 425, 1905.)

Genus VIII. PRION.

Type.

Prion, *Lacépède*, *Mem. l'Inst.* iii, p. 513 (1801) *P. vittatus*.

Bill moderate ; about as long as the head, of very varying breadth, hook small, not half the length of the culmen ; sides of the palate with a series of horny lamellæ more or less well developed ; tip of the lower mandible down-curved ; nasal tube very short, hardly a quarter the length of the culmen, the orifices separated by a septum which extends forwards beyond the external openings ; wings moderate, first primary usually the longest ; tail of twelve feathers ; tarsus slender, shorter than the middle toe and claw and covered

with hexagonal scutes; claw of the hind toe minute; size small; plumage slaty-blue.

This genus, containing the Blue Petrels generally termed "Whale Birds" by Sailors, ranges over the Southern Ocean. Five species, all of which have been reported from the Cape seas, are usually recognised.

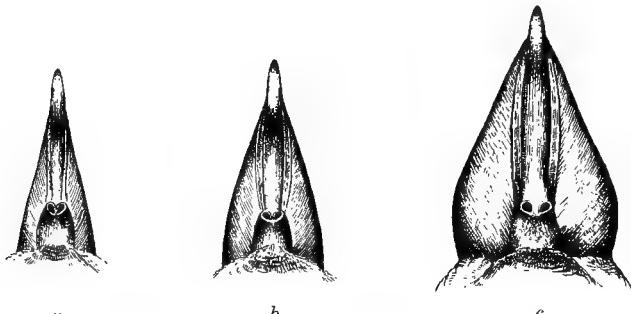


FIG. 151.—Bills of (a) *Prion desolatus*, (b) *Prion banksi*, (c) *Prion vittatus*, from above. $\times \frac{1}{2}$

Key of the Species.

- A. Outer tail-feathers white, the middle ones tipped with white *P. cæruleus*, p. 488.
- B. Outer tail-feathers grey, central ones tipped with black.
 - a. Bill very wide, 0·65 to 0·80 at base, edges of maxillæ convex *P. vittatus*, p. 490.
 - b. Bill wide, 0·50 to 0·55, edges of maxillæ convex *P. banksi*, p. 489.
 - c. Bill narrow, about 0·40 at base, edges of maxillæ almost straight *P. desolatus*, p. 491.
 - d. Bill narrow, smaller and more compressed, and head paler than in the other species *P. brevirostris*, p. 492.

797. *Prion cæruleus*. *Blue Petrel.*

Procellaria cærulea, Gmel., *Syst. Nat.* i, p. 560 (1788); *Layard, B. S. Afr.* p. 361 (1867).

Procellaria forsteri, Smith, *Illustr. Zool. S. Afr. Aves*, pl. 53 (1840).

Halobæna cærulea, Sharpe, ed. Layard's *B. S. Afr.* p. 768 (1884); *Swinburne, Proc. R. Phys. Soc. Edin.* ix, p. 198 (1886); *Salvin, Cat. B. M.* xxv, p. 431 (1896); *Shelley, B. Afr.* i, p. 168 (1896).

Prion cæruleus, Reichenow, *Vögel Afr.* i, p. 31 (1900); *Vanhöffen, Journ Ornith.* 1901, p. 310.

Description.—*Adult.*—Above pale ashy-blue, darker on the crown, nape, lesser wing-coverts, outer webs of the outer primaries and scapulars, the last tipped with white; feathers of the middle of the forehead and anterior part of the crown largely tipped with white; rest of the forehead and whole of the under surface pure white; sides of the breast ashy-blue; under wing-coverts, primaries beneath, and axillaries white; outer tail-feathers white, the next two ashy, with the base of the inner web white, the three next ashy with white tips, widest on the middle feather, a slightly darker subterminal ashy band. Bill black; edge of the mandible blue; tarsi and toes blue; webs flesh colour.

Length about 11·0; wing 8·5; tail 3·6; bill 1·4; tarsus 1·3; middle toe 1·6.

Distribution.—The Blue Petrel is found throughout the Southern Ocean, usually between lat. 40° and 60° S., though occasionally wandering beyond those limits. It appears to be a somewhat rare bird in the seas immediately surrounding the coasts of South Africa, though occasionally driven northwards by gales. An instance of this occurred to Mr. Rickard at East London. Professor Van-höffen identified a considerable number of these birds at sea two days out from Cape Town towards the Bouvet Islands, in about 40° S. lat., 15° E. long.

Habits.—There is but little of special interest in regard to the habits of the Blue Petrel. Kidder and Eaton both found it breeding on Kerguelen; a single egg is laid at the end of a long and somewhat tortuous burrow placed in the hill-side near the sea. The birds can be easily traced by the curious dove-like coo, to which they give vent from their burrows when any one approaches. The egg is ovoid and dull white in colour, measuring about 2·0 × 1·5.

798. *Prion banksi*. Banks' Blue Petrel.

Pachyptila banksi, Smith, Ill. Zool. S. Afr. Aves, pl. 55 (1840).

Prion banksi, Gurney, Ibis, 1864, p. 355 [Natal Coast]; Layard, B. S. Afr. p. 362 (1867); *id. Ibis*, 1867, p. 460; Sperling, Ibis, 1868, p. 293; Salvin, Cat. B. M. xxv, p. 434 (1896); Shelley, B. Afr. i, p. 168 (1896); Reichenow, Vög. Afr. i, p. 32 (1900); Shortridge, Ibis, 1904, p. 204.

Prion vittatus, Sharpe, Phil. Trans. vol. 168, p. 185, pl. vii, fig. 7 (1879); *id. ed. Layard's B. S. Afr.* p. 769 (1884).

Description.—*Adult.*—General colour above ashy-blue, darker on the head, nape, and on a streak below and behind the eye, above

which is a white patch ; angle of the wing, lesser wing-coverts, ends of the scapulars (except the extreme tips, which are white) and tips of the tail-feathers, except the outer pair, ashy-black to black ; below, including the lores, axillaries and under wing-coverts white with a faint wash of blue on the flanks and under tail-coverts.

Iris black, bill black with the unguis yellow ; bill moderately broad, the lamellæ along the upper mandible just visible at the rictus, when the bill is closed ; legs dark blue.

Length (in the flesh) 11·5 ; wing 7·40 ; tail 4·0 ; culmen 1·25 ; width of the bill at base 0·50 to 0·55 ; tarsus 1·25 ; middle toe 1·35.

Distribution.—Banks' Blue Petrel was first described by Sir A. Smith from the Cape seas, whence its range extends into the South Atlantic in the one direction, and the New Zealand and Australian Coasts in the other ; but there is a good deal of uncertainty about the number and the distinctions between the species of this genus, so that it is difficult to state their exact range with certainty.

The present species is certainly not uncommon in Cape Seas and is often driven ashore after great gales, sometimes in considerable numbers. One of those mentioned by Layard as having been found at Green point (a suburb of Cape Town) in April, 1866, is still in the Museum, and there are several more, recently obtained in the months of June and September, by Mr. Shortridge, at Port St. John's, in Pondoland ; Ayres also records this Petrel from the Natal Coast, where many hundreds were cast ashore in August, 1862, all in a very emaciated state and weak from the want of food. I have not heard of its occurrence on the West Coast of Cape Colony, but Kirk met with it on the East Coast in the Mozambique Channel and as far north as the Seychelles.

799. *Prion vittatus*. Broad-billed Blue Petrel.

Procellaria vittata, Gmel. *Syst. Nat.* i, p. 560 (1788).

Prion vittatus, Gould, *B. Austr.* vii, pl. 55 (1844) ; Layard, *Ibis*, 1862, p. 97 ; 1863, p. 249 ; Sharpe, *Phil. Trans.* vol. 168, p. 135, pl. 7, figs. 3-6 (1879) ; Swinburne, *P. R. Phys. Soc. Edin.* ix, p. 199 (1886) ; Salvin, *Cat. B. M.* xxv, p. 432 (1896) ; Shelley, *Bds. Afr.* i, p. 168 (1896) ; Reichenow, *Vög. Afr.* i, p. 31 (1900).

Description. Adult Male.—Very similar to *P. banksi* in size and plumage, and only distinguished by its very much broader bill, in which the lamellæ of the under side of the upper mandible can be seen all along when closed.

Wing 7.75; culmen 1·3; width of bill at base 0·65 to 0·80.

Distribution.—This Petrel, which appears to be very doubtfully distinct from *P. banksi*, is found throughout the Southern Indian Ocean and New Zealand seas; it breeds on St. Paul near Kerguelen and on the Chatham Islands. It has been recorded by Layard and Swinburne from Cape seas, but even should it be found to be really separable from *P. banksi*, it is probable that the Blue Petrels seen by these observers were really referable to the latter species.

800. **Prion desolatus.** *Narrow-billed Blue Petrel.*

Procellaria desolata, *Gmel. Syst. Nat.* i, p. 562, (1788).

Procellaria turtur, *Kuhl, Beitr.* p. 148 (1820); *Smith, Ill. Zool. S. Afr. Aves*, pl. 54 (1840); *Layard, B. S. Afr.* p. 361 (1867).

Prion turtur, *Pelz. Novara Reise*, *Vög.* p. 147 (1865).

Pseudoprion turtur, *Gurney, in Andersson's B. Damaral.* p. 352 (1872).

Prion desolatus, *Sharpe, Phil. Trans.* vol. 168, p. 137, pl. vii, figs. 8-10 (1879); *id. ed. Layard's B. S. Afr.* p. 769 (1884); *Swinburne, P. R. Phys. Soc. Edin.* ix, p. 199 (1886); *Salvin, Cat. B. M.* xxv, p. 434 (1896); *Reichenow, Vög. Afr.* i, p. 32 (1900).

“Whale Bird” of sailors, a name also applied to the other species of the genus.

Description. Adult.—Resembling *P. banksi*, but with a much narrower bill; the sides of the upper mandible are nearly straight and not out-curved, and the lamellæ underneath are small and not visible when the bill is closed.

Iris black; beak and legs pale blue.

Length 11·75; wing 7·25; tail 3·75; culmen 1·2; width of the bill at the base .40; tarsus 1·2; middle toe 1·2.

Distribution.—The Narrow-billed Blue Petrel has much the same range as the other species of the genus, being found in the Southern Ocean, chiefly between the 30th and 60th parallels; it doubtless often wanders further south and further north, and was met with at the Antarctic Ice barrier, south of Kerguelen by the “Challenger.” I have not come across any notice of its occurrence east of New Zealand in the South Pacific.

This Petrel is not uncommon in the Cape seas, where it has been met with by the Novara Expedition and by the Earl of Crawford, and it is occasionally driven ashore by heavy gales; Andersson has seen it on the coast of German South-west Africa and in Table Bay, while the South African Museum has two examples, one obtained near Cape Town on June 19, 1894, the other picked up dead on

Muizenberg beach in False Bay, on April 27, 1897, by Mr. D. E. Hutchins.

Habits.—Andersson gives some account of this Blue Petrel; he states that it but rarely settles on the water and that it does not pick up refuse thrown from a ship, as do many of the other Petrels, though it will occasionally follow a vessel. It is generally met with in large flocks and is a powerful flyer, rising and sinking with great rapidity and skimming the waves like a Swallow. It and its congeners are called by sailors "Whale Birds," one explanation being that it accompanies Whales in order to secure the droppings from their mouths, while others state that the name is given in consequence of a fancied resemblance between the curious lamellæ on the inside of the upper mandible and the whalebone of the Whale.

This species exists in countless numbers about Kerguelen, where its breeding habits have been observed by Mr. Eaton, Professor Moseley, and Mr. R. Hall. A single egg is laid at the end of a rat-hole-like burrow among the Azorella plants, in about November; at first, before the eggs are laid, both birds will usually be found in the burrow; later on, while incubation is proceeding, only one, usually the female by day and the male at night; finally, when the nestling is hatched, both parents are away all day, only returning at night-time.

There are eggs in the South African Museum brought from the Crozet Isles by Captain Arsmson; they are white, smooth and almost regular ovals, measuring about $2\cdot0 \times 1\cdot5$.

801. *Prion brevirostris. Fairy Blue Petrel.*

Prion ariel, Gould, *Ann. Mag. N. H.* xiii, p. 366 (1844) [nom. nud.] ; *Salvin*, *Cat. B. M.* xxv, p. 436 (1896); *Shelley*, *B. Afr.* i, p. 168 (1896).

Prion brevirostris, Gould, *Proc. Zool. Soc.* 1855, p. 88, pl. 93; Reichenow, *Vög. Afr.* i, p. 33 (1900).

Description. Adult.—Nearly similar in colour to the other species of the genus, but with the crown and spot below the eye hardly darker than the back; the terminal dark band of the tail is wider; the bill much narrower and more compressed, though the unguis is as large as that of the other species; the lamellæ along the sides of the upper mandible are very feebly developed and quite invisible when the bill is closed.

Distribution.—The Fairy Blue Petrel, like others of the genus,

is found throughout the Southern Ocean, generally between the 35th and 60th parallels; it has been obtained at Madeira perhaps accidentally. There is no example in the South African Museum, but the British Museum possesses a specimen from the "Cape of Good Hope," presented many years ago by Sir Andrew Smith. This constitutes the sole South African record, so far as I am aware.

Subfamily III. PELICANOIDINÆ.

Nostrils distinct; opening upwards in either side of the middle of the base of the culmen; margin of the sternum even, the sternum itself considerably longer than wide; no *ambiens* muscle; no hallux; second primary slightly the longest.

Genus I. PELICANOIDES.

Type.

Pelicanoides, *Lacépède, Mem. l'Inst.* iii, p. 513 (1801) *P. urinatrix*.

Bill short and stumpy, about half the length of the head; nostrils opening upwards on either side of the base of the culmen by two distinct orifices; wings short, the second primary slightly the longest; tail short and nearly square of twelve feathers; tarsus short and slightly ridged in front, covered with small hexagonal scales; no trace of a hind toe.

Three closely allied species of Diving Petrel are assigned to this genus, which ranges throughout the Southern Ocean; one of them appears to occur occasionally in the Cape Seas.

802. **Pelicanoides exul.** *Diving Petrel.*

Pelicanoides urinatrix (nec Gmel.) Green, Ocean Birds, p. 36 (1887).

Halodroma exul, Cab. & Reich., Journ. Ornith. 1876, p. 328.

Pelicanoides exul, Salvin, Cat. B. M. xxv, p. 438 (1896); *Shelley, B. Afr.* i, p. 168 (1896).

Description. Adult.—General colour above shining black, most of the feathers with greyish bases, this colour extending throughout the inner webs of some of the scapulars; below white, the sides of the neck and a band across the chest mottled with grey, due to a subterminal bar of that colour on most of the feathers; flanks and

under wing-coverts also slightly mottled with grey. Bill black; feet bluish.

Length about 8·5; wing 4·7; tail 1·5; culmen .7; tarsus 1·0; middle toe 1·0.

Distribution.—This Diving Petrel is found throughout the southern part of the Indian Ocean and is especially abundant at Kerguelen and the Crozet Islands, whence the South African Museum possesses examples. A Diving Petrel was observed by Mr. Green off the Cape of Good Hope when homeward bound from Australia. This is the only record of its occurrence about the South African seas.

Habits.—This bird is interesting as an example of special modification of the Petrel type. It has lost the power of strong flight possessed by its relatives, but has acquired a great facility for diving, during which process it uses its wings to assist in its progression under water.

It breeds on Kerguelen, laying a single egg at the end of a long burrow.

Subfamily IV. DIOMEDEINÆ.

Nostrils lateral, separated by a wide culmen, each in a separate sheath opening forwards; margin of the sternum uneven, the sternum short compared with its width; no basipterygoid processes; humerus pneumatic; first primary the longest; ambiens muscle and cæca present; hind toe absent or very rudimentary.

Genus I. DIOMEDEA.

Type.

Diomedea, *Linn. Syst. Nat.* 12th ed. i, p. 214 (1766) *D. exulans*.

Bill stout and strong, longer than the head; formed of four pieces, the culminicorn along the culmen, the pair of latericorns on either side and the apicorn at the apex; culminicorn bordering the latericorn, behind and in front of the nostrils; no longitudinal groove along the lower mandible; line of the lower edge of the lower mandible almost straight, the tip not downcurved; nostrils on either side of the culminicorn between it and the latericorn, surrounded by a separate bony sheath and opening forwards; wings very long when outstretched, owing chiefly to the great length of

the arm and forearm, which bears from thirty to forty secondary quills; tail short and rounded; tarsus shorter than the middle toe and covered with small hexagonal scales; hind toe absent externally.

This genus contains the Albatroses, some nine or ten species of which are usually recognised, distributed throughout the Southern Ocean and extending far north of the line in the Pacific. Two species are commonly found in the seas round South Africa.

Key of the Species.

- A. Larger, wing about 27·0; upper back white with narrow transverse zigzag freckling..... *D. exulans*, p. 495.
- B. Smaller, wing about 20·0; back black *D. melanophrys*, p. 499.

803. **Diomedea exulans.** *Wandering Albatros.*

Diomedea exulans, *Linn. Syst. Nat.* 12th ed. i, p. 214 (1766); *Gould, B. Austr.* vii, pl. 38 (1844); *Hutton, Ibis*, 1865, p. 278, 1867, p. 185, 1903, p. 81, figs. 7-10; *Layard, B. S. Afr.* p. 363 (1867); *Gurney, in Andersson's B. Damara*, p. 355 (1872); *Moseley, Notes Nat. Challenger*, pp. 134, 171, 180, 183, 254 (1879); *Sharpe, ed. Layard's B. S. Afr.* p. 770 (1884); *Challenger Reports, Narrative* i, pt. 1, p. 294, pl. xiv [birds on nest] (1885); *Swinburne, P. R. Phys. Soc. Edin.* ix, p. 199 (1886); *Green, Ocean Bds.* p. 4, pl. 1 (1887); *Salvin, Cat. B. M.* xxv, p. 441 (1896); *Shelley, B. Afr.* i, p. 169 (1896); *Reichenow, Vög. Afr.* i, p. 21 (1900).

The "Cape Sheep," "Great Albatros," "Man of War Bird" and "Goney" are all names which are sometimes applied to this bird.

Description. Adult.—General colour above white, the feathers on the nape, the back of the neck and upper half of the back with very narrow zigzag cross bands of black, about three on each feather, giving a freckled appearance; wings dark brown mottled with a good deal of white, the quills with concealed white bases, the secondaries and most of the coverts with white inner webs, the visible white increasing away from the tips, scapulars and some of the coverts on the humeral portion of the wing white freckled with black like the back but more strongly; tail-coverts white, tail white with a few slaty spots and mottlings on the edges and tips of the feathers; below including the under wing- and tail-coverts white, with traces of the characteristic freckling on the sides and across the middle of the chest; exposed portions of the primaries black below without a white patch.

Iris brown; bill white with a pinkish tinge becoming yellowish when dried; legs white with a bluish tinge.

Length of a very large male 53·0; wing 27·0; length of out-stretched wing 55; spread of wings from tip to tip when out-stretched 10 ft. 1 in.; tail 9·5; culmen 8·0; tarsus 4·75; middle toe 6·5.

The largest bird measured by Mr. Green, who had had a good deal of experience, was 11 ft. 4 in. across the wings. The weight of an adult male is from 16 to 19 lbs.

A young bird is uniform brown above with the wings darker, almost black; the face including a narrow band across the forehead, space round the eyes and throat white, below brown like the back,

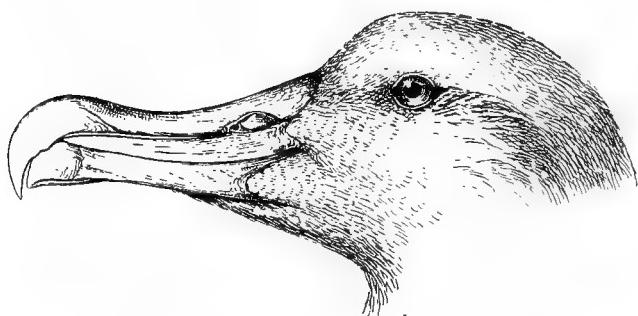


FIG. 152.—Head of *Diomedea exulans*. $\times \frac{1}{4}$

paler and slightly freckled on the abdomen; under wing-coverts and edge of the wing along the distal end of the radius white. As the bird grows older the brown feathers are gradually replaced by freckled ones and the coverts of the wing become parti-coloured.

A series of young birds measured in the flesh were from 39 to 41 in. in length, the wings from 49 to 51 in. and the spread from tip to tip of the wings across the back from 9 ft. 6 in. to 9 ft. 7 in.

The nestling is covered with pure white silky down and has at the tip of the mandibles according to Layard, a hard white china-like tumid sheath.

Distribution.—The Wandering Albatros is found in the Southern Atlantic and Pacific Oceans including the seas about New Zealand, Patagonia and South Africa; its usual range is between the 30th and 60th parallels but it is no doubt exceptionally found beyond

these limits, and has even been recorded from time to time in European and North American waters, though it has never been met with in the neighbourhood of the Antarctic Ice Pack. The bird found in the Southern Indian Ocean which nests on the Prince Edward Islands, the Crozet Islands and Kerguelen has recently been discriminated by Salvin as a different species under another name (*D. chionoptera*).



FIG. 153.—*Diomedea exulans*.

If the validity of the last-named species is maintained it will almost certainly be found to occur off the coast of South Africa. It is distinguished by having the upper back quite white without any narrow transverse bands and the primaries beneath with a large white patch on the inner web. All the examples in the South African Museum are undoubtedly referable to *D. exulans*; they are all from Table Bay or its vicinity and have been obtained in the months of August and September.

Habits.—This, the largest of all the sea birds and generally known as "The Albatros" without any qualification, is to be found

about the Cape seas throughout the winter months till November, when it leaves our shores for its breeding places in the South Atlantic. It only occasionally comes inside Table Bay but is generally to be seen a few miles out at sea.

The majestic flight of this bird as it sails over the waves with its narrow pointed wings held almost motionless has always been a source of wonder and admiration to travellers. An explanation of this mysterious power of continuous movement without any apparent motion of the wings or exertion on the bird's part is given by Mr. A. C. Baines (*Nature*, xl., p. 9, 1889). He points out that the birds usually rise in a slanting direction against the wind, then make a turn in a large circle during which one wing points downwards the other upwards and finally make a rapid descent down the wind. As the velocity of the wind near the surface of the water is diminished by the friction of the waves, the bird as it rises against the wind enters currents of gradually increasing velocity so that the loss of velocity consequent on rising is partially or perhaps, when the wind is strong, wholly made good and the bird just gains energy of position which is converted into energy of motion when descending. Furthermore, there is no doubt that it is only when the wind is fairly fresh that the Albatros can continue the sailing flight for any length of time; when the wind drops they will be observed to begin to flap their wings much more frequently until, when watched from a steamer, they are often left behind.

The Albatroses feed chiefly on cephalopods (squids and octopus) the horny beaks of which are generally to be found in their stomachs, they also eat fish and other marine animals as well as galley refuse thrown out from ships; they do not dash down on to the surface from above, neither do they dive below, but settle down gently on to the water and take their time about collecting their food; in order to start off again in flight they commence by running along the surface of the water with outstretched wings in order to obtain sufficient impetus to carry them up into the air.

The Wandering Albatros breeds on Tristan da Cunha and Gough Islands in the South Atlantic while the closely allied species *D. chionoptera* resorts to the Crozet Isles, Prince Edward Island and Kerguelen. The nest is a conical elevation about 18 in. high and 36 in. in diameter, while the bowl at the top measures about 18 in. across and is about 5 in. in depth. It is built up of grass tufts and moss beaten in with earth. Only one egg is laid and the

male is generally to be seen seated on the ground close to the brooding female.

According to Sperling the eggs are laid in January, while Moseley found many fresh eggs on Marion Island of the Prince Edward group on December 26; the young ones are not ready to fly till the following November, and are eaten with considerable relish by the inhabitants of Tristan. When scared off the nests the birds seldom fly but waddle off to some distance. Photographs of the birds on their nests are given in the "Challenger" Reports ("Narrative of the Cruise i.," pt. 1, p. 294, pl. 14), and by Mr. Hall (*Ibis*, 1900, p. 13).

The South African Museum possesses an egg from Tristan and others from the Crozet Isles, as well as several the history of which is lost. The Crozet egg, which is probably referable to *D. chionoptera*, measures 5·3 × 2·25, the Tristan egg 5·0 × 2·0. They are almost perfect ovals, white, somewhat rough and pitted, and have a few small spots of dull rufous at the larger end.

The name Albatros is said to be a corruption of the Spanish word Alcatraz by which the Pelican is generally known in the Iberian Peninsula, and which is often vaguely applied to other large sea birds.

804. *Diomedea melanophrys*. *Mollymawk*.

Diomedea melanophrys, Temm., *Pl. Col.* pl. 456 (1828); *Gould, B. Austr.* vii, pl. 43 (1844); *Grill, K. Vet. Akad. Handl.* ii, no. 10, p. 57 (1858); *Layard, Ibis*, 1862, p. 97; *Hutton, Ibis*, 1865, p. 283; *Sperling, Ibis*, 1868, p. 295; *Layard, B. S. Afr.* p. 364 (1867); *Gurney, in Andersson's B. Damara*. p. 356 (1872); *Sharpe, ed. Layard's B. S. Afr.* p. 772 (1884); *Swinburne, P. R. Phys. Soc. Edin.* ix, p. 199 (1886); *Salvin, Cat. B. M.* xxv, p. 447 (1896); *Shelley, B. Afr.* i, p. 169 (1896); *Reichenow, Vög. Afr.* i, p. 21 (1900); *Chun, Aus den Tief. Weltm.* p. 221, fig. of bird in flight (1900); *Vanhöffen, Journ. Ornith.* 1901, p. 308; *Shortridge, Ibis*, 1904, p. 204.

"Black-browed Albatros" of some authors, "Molly," "Mollyhawk," or "Mollymawk," of sailors.

Description. Adult Male.—Head and neck all round, rump and upper tail coverts and under parts throughout, including the axillaries and outer under wing coverts, white; a pale slaty streak through the eye; centre of the back and wings slaty-black, darkest on the wings, tail slaty like the back with the shafts of the feathers

white. Iris brown; bill pale yellow, becoming rosy pink at the tip of each mandible; legs and feet pinkish white, the webs pure white.

Length 32·0; wing 20·5; tail 7·5; culmen 5·0; tarsus 2·9; middle toe 4·25.

A female, apparently a young bird, resembles the male except in the colour of the bill, the culminicorn and the apicorns of both mandibles of which are black while the latericorns are greyish black; the extreme tips of both mandibles are whitish horn in colour. In younger birds the crown and back of the neck are suffused with slaty, and the bill is like that of the one above described but slightly paler.

Distribution.—This Albatros is found throughout the Southern Ocean from about the twentieth to the sixtieth parallel of south latitude. Occasionally it wanders northwards and has been obtained as far as the Faroe Islands in the Atlantic and California in the Pacific. It has, however, hitherto not been met with in the southern Ice Pack. Its chief breeding places are the Falklands, the Campbell Islands near New Zealand and Kerguelen, where Mr. Hall has recently found a large rookery.

The Mollymawk is very common in Table and False Bays, and is found along the West Coast as far north as Walvisch Bay, whence it is recorded by Andersson. Along the South Coast it is abundant as far as Algoa Bay, where Mr. Brown informs me it is common. Mr. Shortridge states that they are plentiful at sea off Port St. John's in Pondoland.

The examples in the South African Museum have all been obtained in Table Bay, or from not far off during the months of May, July and August.

Habits.—The Mollymawk resembles in most respects the Wandering Albatros in its habits, but it is more often to be found near the land in bays and harbours; it is very common in Table Bay and is often caught with hook and line by the fishermen and exposed for sale in the fish market; it is eaten chiefly by the Malays, and its flesh is said to taste like hare; the feathers, too, are used to stuff pillows and mattresses.

The stomachs of two birds recently examined in the South African Museum contained the remains of small fishes, the beaks of cuttle fish and broken up shells of Mollusca; in addition the garbage thrown out from ships and fishermen's refuse in harbours is eagerly devoured. Andersson noticed that this bird occasionally made

short dives after its prey. In November the Mollymawk departs from our shores for its breeding places in the Southern Ocean. The nest, like that of the Wandering Albatros, is a conical elevation built up of moss and earth, and on Kerguelen at any rate there are a great many together, forming a rookery at an elevation of from 400 to 500 ft. above the sea. One egg only is laid as a rule, dull white with a cap of rufous specks and blotches at the larger end; the average size is 4·0 × 3·5. There are in the South African Museum four Albatros eggs from Tristan identified with this species, but these not improbably would be more rightly assigned to *Thalassogeron culminatus*, which was the species found breeding there by the "Challenger" Expedition.

Genus II. THALASSOGERON.

Type.

Thalassogeron, Ridgway, Water Birds N. Amer.

ii, pp. 345, 357 (1884)..... *T. culminatus*.

Closely allied to *Diomedea* but with the culminicorn much narrower behind the nostrils and separated at that point by membrane from the latericorn.

Five of the smaller Albatroses are assigned to this genus, the range of which extends throughout the Southern Oceans; of these, three have been found near the coast of South Africa.

Key of the Species.

- A. Culmen bright yellow contrasting with the sides of the bill, which are black.
 - a. Culminicorn rounded posteriorly; lower edge of the mandible yellow *T. culminatus*, p. 501.
 - b. Culminicorn pointed posteriorly; basal edge but not the lower edge of the mandible yellow *T. chlororhynchus*, p. 503.
- B. Bill generally pale, no contrast between the culmen and sides *T. layardi*, p. 505.

805. **Thalassogeron culminatus.** *Gould's Yellow-nosed Mollymawk.*

Diomedea culminata, Gould, Proc. Zool. Soc. 1843, p. 107; id. B. Austr. vii, pl. 41 (1848); Layard, B. S. Afr. p. 364 (1867); Sharpe, ed. Layard's B. S. Afr. p. 773 (1884); Green, Ocean Bds. p. 12, pl. ii, fig. 4 (1887); Shelley, B. Afr. i, p. 169 (1896).

Thalassogeron culminatus, Salvin, Cat. B. M. xxv, p. 451 (1896); Parkin, Ibis, 1900, p. 675.

Description. *Adult.*—Head and neck all round slaty-grey (perhaps becoming white in very old specimens) darker in the centre of the back and blackish brown on the wings; tail like the back with white shafts to the feathers; in front and above the eye a dark patch; rump, upper tail-coverts and lower surface from the chest to the under tail-coverts white, under wing-coverts white, dark brown towards the edge of the wing. Bill with the culminicorn, which is rounded behind and separated behind the nostrils from the latericorn by a black membrane, yellow, front edge of the apicorn red, lower half of the latericorn of the lower mandible yellow, rest of the bill blackish horn; legs and feet fleshy grey.

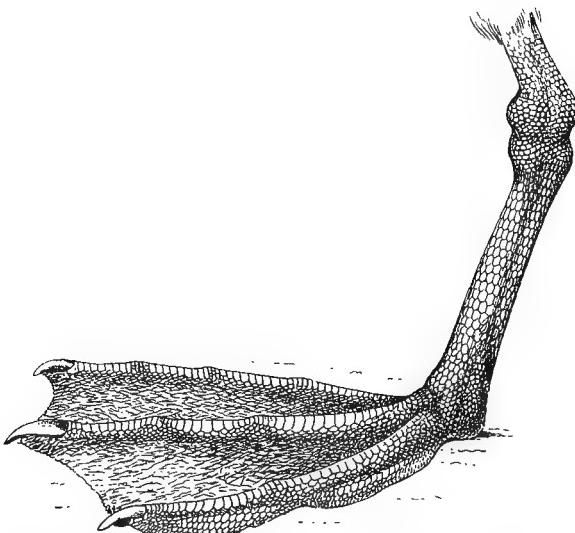


FIG. 154.—Left foot of *Thalassogeran chlororhynchus*. $\times \frac{1}{2}$

Length about 32; wing 18·5; tail 7·0; culmen 5·25; tarsus 3·0; middle toe 4·1. Young birds are browner and have the head leaden grey; the bill is black throughout with a little yellow at the tip.

Distribution.—This Mollymawk, distinguished by having both the upper and lower ridge of the bill yellow, is found throughout the Southern Ocean, ranging chiefly between the 30th and 50th parallels of south latitude. It does not appear to have been met with so far south as the Antarctic Ice Pack, but has been known to wander as far north as Panama in Central America on the Pacific side.

No observer, so far as I am aware, has described the nesting habits of this Mollymawk; the species met with by Prof. Moseley on Nightingale Island appears to have been *T. chlororhynchus*, though identified by him as *T. culminatus*.

Layard met with this species "off the south coast" when cruising in H.M.S. "Castor" many years ago, and two of the specimens obtained by him are now in the South African Museum. Mr. Parkin, too, on one single day during a calm on December 2, 1890, when on a voyage to Australia in lat. 39° S., long. 8° E., shot no less than six examples, so that the species cannot be very rare in Cape seas.

806. *Thalassogeron chlororhynchus*. *Yellow-nosed Mollymawk.*

Diomedea chlororhynchus, *Gmel. Syst. Nat.* i, p. 568 (1788); *Gould, B. Austr.* vii, pl. 42 (1844); *Layard, Ibis*, 1862, p. 97, 1869, p. 377; *id. B. S. Afr.* p. 364 (1867); *Sharpe, ed. Layard's B. S. Afr.* p. 772 (1884); *Green, Ocean Bds.* p. 12, pl. iii, fig. 5 (1887); *Shelley, B. Afr.* i, p. 169 (1896); *Chun, Aus den Tiefen Weltm.* p. 284, with fig. (1900).

Thalassogeron chlororhynchus, *Salvin, Cat. B. M.* xxv, p. 451 (1896); *Reichenow, Vög. Afr.* i, p. 22 (1900).

"Pretty Bird" of Sealers.

Description.—*Adult.*—Head and neck all round, rump and upper tail-coverts and below throughout including the under wing-coverts, pure white; an indistinct grey mark in front of the eye; centre of the back and wings brown, darkest on the latter, slightly tinged with slaty on the former; tail ashy with white shaft marks, the outer tail-feathers paler than the central ones, almost white along the outside of the shafts; under wing-coverts white except along the edge of the wing where they are brown.

Iris brown; bill black; the culminicorn which is pointed posteriorly and separated from the latericorn by a black membrane, yellow, becoming blood-orange at the tip; a little yellow at the edge of the base and at the tip of the lower mandible but the greater part of its length black; legs flesh-coloured.

Length about 29·5; wing 18·5; tail 7·75; culmen 5·25; tarsus 3·0; middle toe 3·90.

Distribution.—As with the other Albatrosses, the Southern Ocean from 30° S. lat. to 50° S. lat. constitutes the general range of this bird. It has not been met with in the extreme Antarctic regions but often wanders north of its usual boundary.

The Yellow-nosed Mollymawk is not uncommon in the Cape seas and was obtained by Layard off the southern coast of the Colony many years ago. It sometimes comes into the bays and harbours along the coast though not nearly so frequently as the true Mollymawk (*D. melanophrys*). There is an example in the South African Museum, obtained at Simons Bay, while Rickard has noticed it off Port Elizabeth and East London. Up the western coast it is recorded by Schrenck from Angra Pequeña in German South-west Africa.

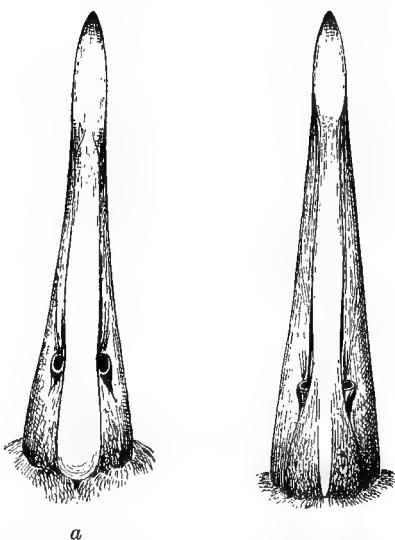


FIG. 155.—Bills of (a) *Thalassogeran culminatus*, and (b) *Thalassogeran chlororhynchus*, from above, to show the distinction in the shape of the culmicorn. About $\frac{1}{2}$.

Closely allied to this species is *T. eximus*, Verrill [*Trans. Connecticut Acad.*, ix., p. 440 (1895)], described from Gough Island in the South Atlantic. It is similar in plumage, but lacks the transverse bar of yellow at the base of the lower mandible. Should it prove to be really distinct it will probably be found in the Cape seas. During the recent voyage of the "Scotia" of the "Scottish National Antarctic" Expedition, it was not met with.

Habits.—So far as its habits at sea are concerned the Yellow-nosed Mollymawk does not differ from other Albatrosses. During the breeding season it resorts to Nightingale Island, one of the Tristan group, where it was observed by Moseley on October 17. The

nest is very singularly shaped, being cylindrical with a shallow concavity at the top and a somewhat overhanging edge; the single egg is held in a sort of pouch whilst the bird is incubating, so that it is necessary to drive the bird right off the nest before the egg is dropped; the nests are scattered about in a Penguin rookery with which birds the Mollymawks seem to be on very good terms. There are two eggs in the South African Museum, brought by Capt. Arsmson from the Crozet Isles. They are slightly obtuse ovals in shape and a little pitted and rough in texture; the colour is white with a ring of reddish-brown freckling round the obtuse end; they measure 4·10 × 2·75.

This Albatros appears also to breed in the Island of St. Paul in the Indian Ocean; the naturalists of the "Novara" Expedition found a large number of young birds among the cliffs of that Island when they visited it in the month of November, but no eggs were taken.

807. *Thalassogerón layardi*. *Layard's Mollymawk.*

Thalassogerón layardi, *Salvin*, *Cat. B. M.* xxv, p. 450 (1896); *Reichenow*, *Vög. Afr.* i, p. 23 (1900).

Description.—*Adult*.—Crown, cheeks, rump, upper tail-coverts and whole under surface, including the under wing-coverts and axillaries white; a greyish-black mark in front of the eye and extending over it, the edges not sharply defined but passing into pale grey which spreads over the face; back, and sides of the neck pale grey, becoming a dark slaty-grey on the wings and tail. Bill greyish horny, darker at the tip but with no yellow; legs pale yellow (in dried skin).

Length about 39·0; wing 22·0; tail 8·5; culmen 5·4; tarsus 3·5; middle toe 5·0.

Distribution.—This Mollymawk was described from a single specimen from the "Cape seas" obtained by Mr. Layard and now in the British Museum. I have lately examined a second example, a male, obtained by Mr. J. v. O. Marais on August 23, 1899, just outside the Knysna Heads and now in the Pretoria Museum.

Genus III. **PHŒBETRIA.**

Type.

Phœbetria, *Reichb.*, *Natürl. Syst. Vög.* p. v. (1852)... *P. fuliginosa*.

Bill as in *Diomedea* with the culminicorn and latericorn meeting behind the nostril tubes; a longitudinal groove along the lower mandible; tail long and wedge shaped, the outer feathers falling

short of the central ones by about the length of the tarsus; tarsus considerably shorter than the middle toe; hind toe present but very minute, represented externally by a rudimentary claw.

Only one species of this genus is recognised by Salvin; but it is probable that *P. cornicoides*, Hutton, distinguished by its blue mandibular stripe, grey back and breast and smaller size, is distinct.

808. *Phœbetria fuliginosa*. Sooty Albatros.

Diomedea fuliginosa, Gmel. *Syst. Nat.* i, p. 568 (1788); *Gould, B. Austr.* vii, pl. 44 (1848); *Layard, Ibis*, 1862, p. 95, 1867, p. 458; *id. B. S. Afr.* p. 365 (1867); *Sperling, Ibis*, 1868, p. 295; *Sharpe, ed. Layard's B. S. Afr.* p. 773 (1884); *Green, Ocean Bds.* p. 14, pl. iii, fig. 6 (1887); *Shelley, B. Afr.* i, p. 169 (1896); *Chun, Aus den Tiefen Weltm.* pp. 177, 178, 220, with figures (1900).

Phœbetria fuliginosa, *Salvin, Cat. B. M.* xxv, p. 453 (1896); *Reichenow, Vög. Afr.* i, p. 23 (1900).

“Blue Bird,” “Piv,” or “Piew,” and “Stinkpot” are all names applied to this bird by sailors and sealers.

Description. Adult.—General colour sooty brown throughout, a little paler in the middle of the back and below and darker on the wings and front of the face; a ring of short stumpy white feathers, broken in front, round the eye; tail long and wedge-shaped with white shafts to the feathers.

Iris dark brown; eyelids white; bill black, the lower mandible with a marked groove along the greater part of its length which is bright orange; legs and feet dark hazel.

Length about 33·0; wing 20·5; tail central feathers 9·5; lateral feathers 6·25; culmen 5·0; tarsus 2·80; middle toe 4·10.

Some birds, presumably young ones, have the nape of the neck white. A nestling is covered with slate-coloured down; the bill is slaty-black, the iris faint hazel and the pupil blue; the legs are also bluish.

Distribution.—The range of the Sooty Albatros is very similar to that of the others, except that it has been met with on the margins of the Ice Pack further south. It does not usually wander north of the thirtieth parallel, but south of this it is fairly abundant throughout the Southern Ocean. It is known to breed on Kerguelen, the Crozet Islands and Tristan.

Though seldom visiting our coast and harbours the Sooty Albatross is not uncommon a short distance away out at sea. There is

an example in the South African Museum, obtained by Layard during his voyage in H.M.S. "Castor," and the Earl of Crawford and Balcarres secured an example in 37° S. lat., 29° E. long. off the southern Coast of the Colony.

Habits.—The Sooty Albatros can be easily distinguished by its wedge-shaped tail, and when it is at fairly close quarters, by the conspicuous white ring round the eye. It appears to be less timid and more curious in disposition than others of the family and will hover about the rigging of a ship directly above the deck. Professor Chun relates that these birds often came so near the bridge of the "Valdivia" that it was almost possible to catch them with the hand. Like other Albatrosses, their food consists of cuttle fishes and the surface-living crustacea, as well as of scraps thrown out of the ship. Professor Chun says they also devour smaller birds.

Eaton (*Phil. Trans.*, vol. 168, p. 148) and Hall (*Ibis*, 1900, p. 18) both give some account of its breeding habits in Kerguelen. The nests are placed in sheltered situations, generally at the foot of the terraces and cliffs of volcanic rock so plentiful about the island; they are built up in the form of low truncated cones, slightly hollowed at the top; they seem to be used each successive year, but are freshly lined with grass and plant stalks.

As is usually the case, only one egg is laid. There are three examples of it in the South African Museum, obtained by Captain Arsmson on the Crozet Islands many years ago. They are very like those of *Thalassogeran chlororhynchos* in colour, texture and size, measuring 4·15 × 2·55.

Order XIX. PYGOPODES.

This is a small Order containing two well-marked families, the Grebes (*Podicipedidae*), and the Loons or Divers (*Colymbidae*); only the first-named is represented in our fauna.

In this Order the skull is schizognathous and holorhinal, the nostrils are pervious, and there are no basipterygoid processes; the contour feathers have an aftershaft, the oil gland is tufted, the cæca are well-developed, and the fifth cubital remex is absent; the accessory semitendinosus is always absent, and the cnemial process of the tibia is markedly produced forwards.

Family I. PODICIPEDIDÆ.

Cervical vertebræ seventeen to twenty-one in number; only the left carotid present; of the Garrodian thigh muscles only the accessory femoro-caudal and the semitendinosus present; twelve primaries; no distinguishable rectrices.

The members of this family can be always at once distinguished from all other birds by their curiously lobed toes and by the absence of the rectrices.

Genus I. PODICIPES.

Type.

Podiceps, *Lath. Suppl. Gen. Syn.* p. 294 (1787) *P. cristatus*.

Bill moderately long, straight and pointed, the culmen slightly down curved towards the tip; nostrils pervious, at the base of the upper mandible; wings very short and rounded, the primaries and secondaries nearly equal; tail rudimentary, consisting of short

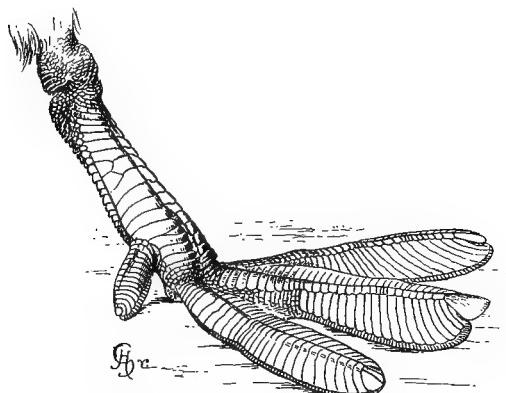


FIG. 156.—Foot of *Podiceps cristatus*. $\times \frac{1}{2}$

downy feathers only, no rectrices; tarsus shorter than the middle toe and claw, compressed to form a ridge anteriorly and posteriorly, where it is serrated, the sides with rows of transversely elongated scales; toes flattened, each with a broad lateral lobe or expansion, coalescing at the base and not contracted at the joints, most developed on the inner side; claws also flattened and forming part of

the lobe; fourth toe the longest; hind toe small and jointed above the level of the others with a small lateral lobe.

About nineteen species of Grebes form this genus, which is spread all over the world; three of these inhabit Africa, while a fourth is confined to Madagascar; the three former are all found within our limits.

Key of the Species.

- A. Largest, wing over 7·0; a bifid occipital crest on both sides of the crown and a ruff round the neck in the breeding plumage *P. cristatus*, p. 509.
- B. Size intermediate; wing about 5·5; an occipital crest right across the crown and a bunch of elongated hair-like plumes behind the eye in the breeding plumage *P. nigricollis*, p. 511.
- C. Size smallest; wing about 4·10; no crest or ruff... *P. capensis*, p. 513.

809. *Podicipes cristatus*. Great Crested Grebe.

Colymbus cristatus, Linn. *Syst. Nat.* 12th ed. i, p. 222 (1766); *Reichenow, Vög. Afr.* i, p. 16 (1900).

Podiceps cristatus, *Pelzeln, Novara Reise, Vög.* p. 140 (1865); *Layard, B. S. Afr.* p. 373 (1867); *Ayres, Ibis*, 1869, p. 303 [*Transvaal*]; *Gurney, in Andersson's B. Dammaral.* p. 345 (1872); *Dresser, B. Eur.* viii, p. 627, pl. 629 (1879); *Sharpe, ed. Layard's B. S. Afr.* p. 785 (1884); *Ayres and Gurney, Ibis*, 1885, p. 350; *Haagner, Ibis*, 1902, p. 581; *Whitehead, Ibis*, 1903, p. 238.

Podicipes cristatus, *Shelley, B. Afr.* i, p. 174 (1896); *Grant, Cat. B. M.* xxvi, p. 544 (1898).

Lophæthyia cristata, *Oates, Cat. B. Eggs*, i, p. 136 (1901)

Description. Adult Male in breeding dress.—General colour above, including the crown and back of the neck, very dark blackish-brown; feathers on each side of the crown elongate, forming a long double crest; wings like the back, except the inner secondaries and the lesser wing-coverts, which are white; sides of the face, throat, neck and under parts pure silvery-white; a very full ruff of outstanding feathers round the upper neck, the bases of which are chestnut and the tips black; sides of the body ashy-black; axillaries and under wing-coverts white.

Iris red; bill reddish-horn, lighter at the tip; legs and feet black.

Length (in flesh) 20·0; wing 7·5; tail 1·0; culmen 1·75; tarsus 2·25.

The females are slightly smaller and have the crest and ruff less developed; in the non-breeding dress these ornaments are quite absent in both sexes. The young birds in down have curious longitudinal stripes of deep smoky-brown and whitish-brown.

Gurney states that South African birds can be distinguished from those of Europe by their slightly smaller size and by the absence of a white superciliary line above the eye.

A comparison of a South African bird with one in the South African Museum from North Prussia does not reveal any material difference in size, but in the case of the European bird, the white of the face certainly extends very clearly up the eye on either side and above to form a narrow superciliary streak, while in the South

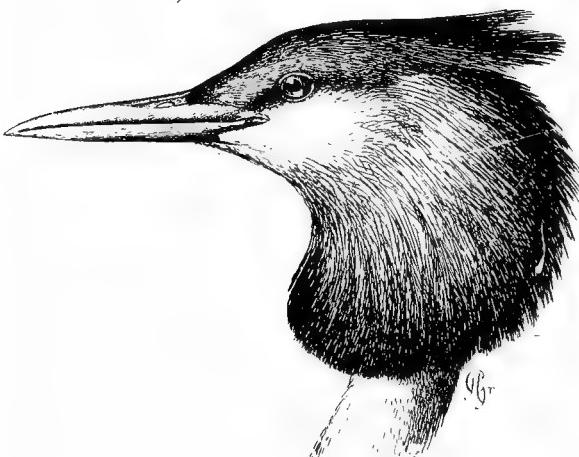


FIG. 157. -Head of *Podiceps cristatus*. $\times \frac{2}{3}$

African bird there is a narrow white line from the base of the beak to the front of the eye, but it does not extend above or behind the eye.

Should these differences prove constant our bird may, perhaps, be worthy of subspecific distinction.

Distribution.—The Crested Grebe is found throughout the whole of the Old World from Ireland to Japan and southwards to Cape Colony, Australia and New Zealand. It does not occur in Madagascar, and has been met with in only one or two localities in Central and Northern Africa, but in South Africa it appears to be more widely spread and abundant, and will probably be found

throughout the country in suitable localities, though not hitherto recognized from Natal, Rhodesia, or the interior of German South-west Africa.

The following are recorded localities: Cape Colony—Cape division (S. A. Mus.), Simonstown (Novara Exped.), Zoetendals Vlei, in Bredasdorp, breeding (Layard), Knysna, August, September (S. A. Mus.), Orange River, near Aliwal North, April (Whitehead); Orange River Colony—Vredefort Road (B. Hamilton), near Mafeteng in Basutoland (Murray); Transvaal—Pretoria (Bt. Mus.), near Johannesburg (Haagner), Potchefstroom, April, September (Ayres).

Habits.—The Great Crested Grebe is an inhabitant of lakes, lagoons and reedy vleis, where it swims and dives with great facility; it is generally found in small parties of from three to four individuals and is very wary; on the least alarm it endeavours to escape by diving; Andersson often found it asleep on the water, floating very deep, so that very little of its body showed. Though awkward on land it is a good flyer, circling round at a considerable height in the air, and though apparently a resident in South Africa, showing considerable power of migration elsewhere. It feeds on small fishes, crustacea and mollusca, while Andersson found chiefly sea grass in the stomachs of individuals examined by him.

Layard met with the Crested Grebe breeding in considerable numbers in Zoetendals vlei; the nests, built of flat sedge, were floating on the water, and the eggs, usually three in number, were almost invariably covered over with wet waterweed by the parent before leaving them; six or eight were found breeding in company. The eggs are chalky white with a greenish tinge, owing to the green lining membrane, when first laid, but soon become brown and discoloured; they are nearly regular ovals and measure about $2\cdot20 \times 1\cdot40$.

810. *Podicipes nigricollis.* *Eared Grebe.*

- Podiceps nigricollis*, *Brehm, Handb. Vög. Deutschl.* p. 963 (1831);
Ayres and Gurney, Ibis, 1868, p. 263; 1869, p. 303; *Gurney, in Andersson's B. Damaral.* p. 346 (1872); *Dresser, B. Eur.* viii, p. 651, pl. 632 (1878); *Sharpe, ed. Layard's B. S. Afr.* p. 786 (1884).
Podiceps auritus (*nec Linn.*) *Layard, B. S. Afr.* p. 374 (1867).
Podicipes nigricollis, *Grant, Cat. B. M.* xxvi, p. 532 (1898).
Colymbus nigricollis, *Reichenow, Vög. Afr.* i, p. 17 (1900).

Description. *Adult in breeding plumage.*—General colour above including the throat, neck all round and upper breast very dark ashy-black, darkest on the head and nape, where the feathers are longer and form a crest; behind the eye a bunch of long hair-like projecting plumes, straw yellow above, more or less chestnut below; outer primaries ashy-brown, white at their bases, the white increasing towards the inner primaries and the secondaries which are pure white; sides and flanks chestnut, rest of lower surface pure white.

Iris crimson with a narrow white ring surrounding the pupil; bill blackish; legs blackish, dusky green at the joints.

Length about 12·5; wing 5·5; tail about 1·0; culmen 1·0; tarsus 1·5. In non-breeding dress the top of the head, back of the neck and back are slaty-black, the chin, throat and sides of the nape white; the ear-coverts and fore neck grey; below which the sides, flanks and thighs are tinged with grey throughout.

According to Ayres the young birds are striped brown and black on the back, white and black on the chin and throat, their bodies being pure white.

Distribution.—The Eared Grebe is found throughout Central and South Europe, and Asia, from Great Britain to China and Japan, but does not occur in India or Southern Asia except near Aden. In the Ethiopian region it has only been met with in Abyssinia and Angola, and within our limits it is by no means common.

The following are recorded localities: Cape Colony—Vogel vlei in Paarl division, breeding (Layard), Cape division and Deelfontein, January (S. A. Mus.); Transvaal, breeding (Ayres); Bechuanaland—Tebra country near Lake Ngami, April (Eriksson in S. A. Mus.); German South-west Africa—Walvisch Bay, November, rare (Andersson).

Habits.—This Grebe was unknown in South Africa until the year 1859, when Layard found it nesting in considerable numbers in a large lake known as Vogel vlei, between Wellington and Hermon, about fifty miles from Cape Town. Subsequently Ayres met with it in the Transvaal, probably near Potchefstroom, though this is not specifically mentioned, where it also breeds in the shallow lagoons. The nests are usually floating, and constructed of sedge and rushes, they are about a foot in diameter, and two or three inches out of the water, and the eggs, which are from three to five in number, and chalky white when first laid, are generally

a good deal discoloured by the peaty and dirty water in which they often lie without apparently any damage accruing to them.

811. *Podicipes capensis. Cape Dabchick.*

Podiceps capensis, *Licht.*, *Nomencl.* p. 104 (1854) [nom. nud]; *Salvadari*, *Ann. Mus. Civ. Genov.* (2) i, p. 252 (1884); *Woodward Bros.*, *Natal B.* p. 213 (1890).

Podiceps minor, (nec *Gmel.*) *Gurney*, *Ibis*, 1862 p. 153 [Natal]; *Ayres*, *Ibis*, 1869, p. 303, 1880, p. 271, 1885, p. 351; *Layard*, *B. S. Afr.* p. 374 (1867); *Gurney*, in *Andersson's B. Damaral.* p. 347 (1872); *Barratt*, *Ibis*, 1876, p. 214; *Oates*, *Matabeleland*, p. 828 (1881); *Holub & Pelzeln*, *Orn. Süd-Afr.* p. 331 (1882); *Butler*, *Feilden and Reid*, *Zool.* 1882, p. 426; *Sharpe*, ed. *Layard's B. S. Afr.* p. 787 (1884); *Haagner*, *Ibis*, 1902, pp. 575, 581.

Colymbus fluviatalis (nec *Tunst.*) *Fleck*, *Journ. Ornith.* 1894, p. 879.

Tachybaptes capensis, *Sharpe*, *Bull. B. O. C.* iv, No. 20, p. iv (1894); *id. Ibis*, 1895, p. 139.

Podicipes capensis, *Shelley*, *B. Afr.* i, p. 174 (1896); *Sharpe*, *Ibis*, 1897, p. 517 [Zululand], 1904, p. 8 [Deelfontein]; *Grant*, *Cat. B. M.* xxvii, p. 513, pls. vii, viii (1898); *Marshall*, *Ibis*, 1900, p. 269; *Shortridge*, *Ibis*, 1904, p. 207.

Colymbus capensis, *Reichenow*, *Vög. Afr.* i, p. 18 (1900).

Description. *Adult in breeding plumage.*—Crown, sides of the face as far as the hinder edge of the eye, throat, nape, back of neck, and back of wings, dark slaty-black; primaries ashy-brown, white at their bases, secondaries white, with an ashy-brown band along the outer edge of the outer web, some of the inner secondaries quite white; ear-coverts, sides and front of the neck rich chestnut; under parts white tinged with grey on the lower fore neck, sides, flanks and abdomen.

Iris brown; bill black, paler at the tip, greenish at the gape; legs and feet black with greenish tinge at the tarsal joint.

Length (in flesh) 10·5; wing 4·10; tail 75; culmen .75; tarsus 1·35.

In non-breeding dress the upper parts from the crown to the tail are ashy-black, slightly paler than in the breeding dress; the chestnut of the sides and front of the neck is replaced by very pale tawny-brown, the chin is white and the under parts are dull white slightly soiled with brown; the flanks and abdomen are ashy. Bill, upper mandible black, sides and lower mandible yellowish; legs greenish black.

A young bird is like the adult in non-breeding plumage, but the sides of the head and neck are marked with irregular longitudinal bands of white and brown.

Distribution.—The Cape Dabchick is found throughout Africa, Madagascar, Persia, India, Ceylon and Burma, replacing in these countries the Dabchick of Europe to which it is very nearly related.

In South Africa the present species is certainly far the most abundant and widely spread of the Grebes and has been noticed, often in considerable numbers throughout its whole extent; it is a resident.

The following are recorded localities: Cape Colony—Cape, Beaufort West, Knysna, September, Port St. Johns, October (S. A. Mus.), Port Elizabeth and East London (Rickard), King William's Town (Trevelyan), Deelfontein in Richmond division, November (Seimund); Basutoland — near Mafeteng (Murray); Natal—Durban Harbour, and St. Lucia Bay in Zululand, June (Woodward), Newcastle district, October, November (Butler); Transvaal — Pretoria (Bt. Mus.), near Johannesburg (Haagner), Potchefstroom, July, August (Ayres); Bechuanaland—Lake Ngami (Andersson), Tebra country, March (Eriksson), Tchakani Vlei near Shoshong, May (Oates); Rhodesia—Tamasancha, December (Oates), near Salisbury, occasionally (Marshall); German South-west Africa—Kalahari, August, Great Namaqualand, April (Fleck), Otjikoto, Omanbonde, Walvisch Bay and Ondonga breeding (Andersson).

Habits.—This little Grebe is very common wherever there are lagoons or vleis suitable to it; it is also found along streams and rivers where there are quiet pools and reaches. It is an active bird, usually seen in pairs, and is pugnacious, chasing its companions about and very frequently diving; its food consists chiefly of water insects, and Ayres particularly states that he found no fish remains in the stomachs of individuals examined by him. On land, like other Grebes, the Dabchick is exceedingly awkward, lying on its belly like a seal and shuffling along with the help of its feet and wings.

Andersson states that he found this little Grebe breeding at Ondonga in very large numbers. The nest was a mass of weeds and grasses lying on the water; the eggs were from four to six in number, and dirty white in colour; they were always found covered over, often several inches deep, and this was no doubt done before the parent left the nest. The allied species in Europe carries its young when hatched on its back, and probably this is also the case with the present species.

Order XX. IMPENNES.

The Penguins which constitute this order have their wings modified to form paddles ; there are no wing quills differentiated from the other feathers and the limb-bones are flattened and inflexible ; the skull is schizognathous and holorhinal, there are no basipterygoid processes ; the three metatarsal bones are short, and separated from one another by deep grooves, not fused into one bone, as in all other birds ; the feathering is continuous, an after-shaft is present ; oil gland tufted ; accessory semitendinosus, alone of the five Garrodian thigh-muscles absent ; young hatched helpless and covered with down.

The Penguins are confined to the Southern and Antarctic seas, one species only extending as far north as the Galapagos Islands which are situated on the Equator in the Pacific.

The affinities of this Order are rather obscure ; the wing- and feet-characters are probably due to dégradation and not archaic, but the group is an old one and remains of fossil Penguins have been found in the Tertiary deposits of New Zealand. All the species may be grouped in one family, two genera of which have each a single representative in our Fauna.

Key of the Genera.

- A. No crest ; tail very short and concealed by the upper tail-coverts *Spheniscus*, p. 515.
- B. A crest edged on either side by a bunch of yellow superciliary feathers ; tail comparatively long and not concealed *Catarrhactes*, p. 520.

Genus I. SPHENISCUS.

Type.

Spheniscus, Brisson, *Orn.* vi, p. 97 (1760) S. demurus.

Bill stout and rather deep, the basal portion roughened and furrowed with longitudinal ridges ; tip of the upper mandible down-curved and fitting between the abruptly truncated rami of the lower one ; groove dividing the culminicorn from the latericorn inconspicuous ; a bare space round and above the eye ; no elongated crest-feathers ; tail short, not reaching the tip of the toes, composed of 18 or 20 feathers almost concealed by the upper tail-coverts ; feet stout and strong, fully webbed. Size moderate.

This genus contains four well-marked species found on the coasts of South America and South Africa, extending northwards to the Galapagos in the Pacific and to Rio Grande do Sul in southern Brazil on the west and to South Angola on the east side of the Atlantic. One species extends to the Falkland Islands and South Georgia; but curiously enough no member of the genus is found on Tristan da Cunha.

Only the species here described is found along the African coasts.



FIG. 158.—Head of *Spheniscus demersus*. $\times \frac{1}{2}$

812. *Spheniscus demersus*. *Jackass Penguin.*

Diomedea demursa, Linn. *Syst. Nat.* i, p. 214 (1766).

Aptenodytes demursa, Andersson, *Ibis*, 1866, p. 324.

Spheniscus demersus, Layard, *B. S. Afr.* p. 376 (1867); *id. Ibis*, 1869, p. 460; Gurney, in Anderson's *B. Damaral*, p. 348 (1872); Moseley, *Notes Naturl. Challenger*, p. 155 (1879); P. L. Sclater and Salvin, *Report Challenger. Zool. ii. Birds*, p. 124, pl. xxvii; Sharpe, ed. Layard's *B. S. Afr.* p. 789 (1884); Swinburne, *P. R. Phys. Soc. Edin.* ix, p. 196 (1886); P. L. Sclater, *Ibis*, 1891, p. 476; W. L. Sclater, *Ibis*, 1896, p. 519 with photo., 1904, pp. 81-88; Shelley, *B. Afr.* i, p. 169 (1896); Grant, *Cat. B. M.* xxvi, p. 649 (1898); Woodward Bros., *Natal B.* p. 214 (1899); Reichenow, *Vög. Afr.* i, p. 14 (1900); Oates, *Cat. B. Eggs*, i, p. 145 (1901); Shortridge, *Ibis*, 1904, p. 208.

Other references are Van Riebeeck's *Journal*, September 12th to 15th, 1652, in Leibrandt, *Precis of Archives Cape of Good Hope*, Part i, p. 30 (1897); Kolben, *Cape of Good Hope*, English ed. ii, p. 144 (1781); le Vaillant, *Voyage i* pp. 28-9 (1790); Andersson, *Okavango*

River, p. 349, with plate (1861); *Harris, Essays and Photographs*, pp. 197-206, pls. 49, 51, 53, 54, 55 (1901).
“Black-footed Penguin” of some authors.

Description. *Adult.*—General colour above including the centre of the forehead and crown, the back and tail, the upper surface of the flippers, the sides of the face and throat and a horse-shoe shaped narrow band across the chest extending to the flanks, black; below, including a band on either side of the crown from the base of the bill along the sides of the neck and flanks above the horse-shoe



FIG. 159.—*Spheniscus demersus*, from a photograph taken from life by Mr. Harris.

shaped marking and a rounded spot on the tail white; flipper chiefly white below with a very narrow white edging anteriorly and posteriorly. Tail of twenty feathers.

Iris hazel; bill black with a transverse bar of grey across both mandibles; naked skin about the eye grey, at the base of the bill usually pink, sometimes bluish; legs black with grey patches.

Length about 24·5; flipper 6·75; culmen 2·5; middle toe and claw 3·0. The sexes are alike. A young bird is dark above and

white below, but shows no trace of the white bands on the sides of the head or the black horse-shoe shaped band below. Nestlings are covered with a uniform brown down.



FIG. 160.—Jackass Penguins on Dyer's Island, off the coast of the Caledon division of Cape Colony, from a photograph taken by the author.

Distribution.—The Jackass Penguin is confined to the coasts of South Africa, extending from Great Fish Bay just north of the Cunene River in Southern Angola (where it was recently observed by Prof. Vanhöffen, the naturalist attached to the German Deep-sea Expedition) to Natal.

It is most abundant from the neighbourhood of Ichaboe Island, near Angra Pequeña in German South-west Africa, to the Island of St. Croix in Algoa Bay and resorts to all the islands off the coast, between these two points, to breed. Eastward of Algoa Bay, however, it is only occasionally found, generally after severe storms at sea, which drive it beyond its accustomed limits.

Habits.—This Penguin has been known from the earliest days at the Cape; only a few months after the founding of the settlement in 1652 van Riebeeck made an excursion to Robben Island in Table-Bay, and brought back 600 birds and a number of eggs to feed his half-starved settlers with, while Kolben, le Vaillant and all the other early travellers notice it.

The Penguin is the most thoroughly aquatic of all birds; its wings are useless for flight and cannot be bent except at the shoulder joint. They are only used when the bird is diving, when they are rapidly waved to and fro and act as propelling paddles, the legs being outstretched behind, parallel to the tail and working like a rudder.

The Jackass Penguin is very abundant along our coasts but very seldom, if ever, comes ashore voluntarily on the mainland; it resorts to the small islands, especially Dassen and Jut Islands, near Saldanha Bay.

The food consists entirely of fishes caught by diving, and of these they must consume enormous quantities. When captured they are almost invariably very fat, with a thick layer of blubber underlying the skin, and in consequence of this are able to live for a long time, sometimes for weeks, without feeding. When at sea they swim very low in the water, and on the least appearance of danger pop below the surface very quietly and without jump or splash, forming a great contrast in this respect to the Duikers, which spring up above the surface to take a "header" before diving.

When on land the Penguin waddles slowly along in an upright position with its flippers hanging down parallel to its body on either side. If hustled at all it will often fall flat on its belly and wriggle along at a somewhat faster pace with the help of its flippers. Its voice is a loud bray-like call somewhat resembling that of a donkey; hence its name.

A few Penguins can be found breeding on the islands all the year round, but the greater number of the birds land for this purpose in May or June. As the eggs are collected and taken away they go on laying until about August, when they are allowed to sit. On the

sandy islands like Dassen, short, wide burrows are usually constructed about a foot or 18 inches deep and about 6 inches in diameter; these are scraped out by the birds themselves with their hind feet, and are, as often as not, placed under the shelter of a low bush or tuft of grass. Where the ground is rocky and excavation is not possible, some niche or corner among the shore-boulders is selected and the eggs are laid more or less in the open; a few bits of rag or seaweed or rubbish are sometimes made use of to construct the nest, but it is never a very elaborate structure.

The eggs are usually two in number, though sometimes only one, and sometimes three are to be found. They are chalky in texture and are pure white with a faint tinge of bluish, but generally become a good deal stained and soiled before being hatched. In shape they are rounded ovals slightly pointed at one end, measuring on an average 2·65 × 2·0.

The following are the principal islands on which the Penguins breed, beginning in the north on the west coast—Hollams Bird Island, Mercury, Ichaboe, Possession and Halifax, off the coast of German South-west Africa; Marcus, Jutten, Dassen, off the west coast of the Colony, north of Table Bay; Dyer's Isle, off the Caledon Coast, and St. Croix in Algoa Bay.

From most of the above-mentioned islands the eggs are regularly collected during the early part of the breeding season by the employés of the Colonial Government, to whom the islands all belong, and are sent to Cape Town and other large centres, where they are largely purchased and eaten, chiefly by Malays and other coloured people. In 1902 469,400 eggs were gathered, of which more than three quarters, 325,000, came from Dassen Island alone; these were valued at £1,681. In the year previous the returns were even greater; 638,000 eggs, valued at £1,969, were obtained.

The Penguin lives very well in captivity, especially if it can be supplied with living fishes. In the Paris Jardin d'Acclimatation it has even bred, each pair occupying a wooden dog-kennel and successfully hatching off a number of young ones.

Génus II. CATARRHACTES.

Type.

Catarrhactes, Briss., *Orn.* vi, p. 102 (1760) *C. chrysocome*.

Bill short, small, conical and smooth; the culminicorn separated from the latericorn by a strongly-marked groove, in which are situated the slit-like nostrils; a crest of elongate feathers on the

crown, on either side of which is a bunch of elongated superciliary golden feathers; tail relatively long, of fourteen or sixteen feathers.

This genus, containing five species, is found throughout the islands of the Southern Ocean from Tristan and the Falklands to New Zealand and Kerguelen. It does not extend very far south, ranging only between lats. 35° and 60° S.

813. **Catarrhactes chrysocome.** *Rock-hopper Penguin.*

Aptenodytes chrysocome, Forster, *Comment. Gotting.* iii, p. 135, pl. i (1781); Layard, *Ibis*, 1869, p. 378.

Eudyptes chrysocome, P. L. Sclater and Salvin, *Report Chall., Zool. ii, Birds*, p. 128, pl. xxx (1880).

Eudyptes chrysolophus (*nec Brandt*), Sharpe, ed. Layard's *B. S. Afr.* p. 790 (1884).

Catarrhactes chrysocome, Grant, *Cat. B. M.* xxvi, p. 635 (1898).

Description. *Adult* (from Inaccessible, in the Tristan group).—General colour above, including the sides of the face, chin, throat and wings slaty, feathers of the crown somewhat elongated and upstanding, forming a crest, on each side of which are lines of pale yellow plume-like feathers running from behind the nostrils to above the eye, the hinder ones considerably elongated, attaining a length of at least two inches; below, including a patch on the under side of the wing, and the anterior and posterior edges pure white; tail of sixteen feathers.

Iris dull rosy-pink; bill dull pink; feet reddish, darker on the webs.

Length about 25·0; flipper 6·3; tail 3·5 to 4·0; culmen 1·5; middle toe and claw 2·5.

Young birds are duller in colour, there is no crest, yellow or black, and the white extends much further up the throat, almost to the chin.

Distribution.—The Rock-hopper is found throughout the Great Southern Ocean, occurring on the coasts of Kerguelen, South Australia, Tasmania, New Zealand and adjacent Islands, Tierra del Fuego, Falklands, Tristan group, Gough Island, Prince Edward, Marion and Crozet Islands.

The rookeries on the four latter islands are the regular resorts nearest to the South African Coast, which is apparently occasionally visited by this Penguin. Verreaux informed Mr. Layard that in

1828 or 1829 he found a large number of these birds dead on the rocks near Cape point, while one, captured in Table Bay, was brought to Mr. Layard himself in 1868.

Mr. Layard's specimen is no longer in the South African Museum, and there seems to be some little doubt as to whether it should be referred to this or to the allied Macaroni Penguin. This latter species can be at once distinguished by having the yellow crest springing from the centre of the crown and not from the sides. It is found on the islands of the Southern Ocean from the Falklands to Kerguelen, but it has not been met with on the Tristan group. Figures and good descriptions of the habits of both these species will be found in the account of the birds obtained by the "Challenger" Expedition.

Sub-Class II. RATITÆ.

This Sub-class includes a number of flightless birds without any keel to the sternum; all have small wings and no stiff contour feathers. Other characters are: skull dromæognathous (*cf.* vol. iii, fig. 7, p. 7), holorbital, and with basipterygoid processes; coracoid and scapula fused and forming a wide angle with each other; oil gland absent; cæca very long; accessory femoro-caudal, semitendinosus and accessory semitendinosus always present, the first-named provided with an additional slip.

The existing members of the Sub-class are separated into three or four Orders and five Families, comprising the Ostriches, Rheas, Emus, Cassowaries and Kiwis; all of which are confined to the Neotropical, Ethiopian and Australian regions at the present time, though fossil remains of some of the groups have been found in other parts of the world.

Order XXI. STRUTHIONES.

Family I. STRUTHIONIDÆ.

Only two toes, the third and fourth, present; the terminal phalanges shortened, provided with nails; no aftershaft to the feathers; all five Garrodian thigh-muscles present; no clavicles; cæca long; rectrices large.

This Family contains only the single genus here described.

Genus I. STRUTHIO.

Type.

Struthio, Linn. *Syst. Nat.* 12th ed. i, p. 265 (1766) ... *S. camelus*.

Bill broad and depressed, the culmen flattened and the tip strong, rounded and overlapping the lower mandible; nostrils oval,

in a membranous groove near the middle of the bill; wings short and imperfect with long soft plumes; tail moderate, of curved pendant plume-like feathers; tarsi very long and strong, covered in front on the lower half with transverse scutes; toes only two in number, the third and fourth, short and robust, the outer the shorter; claws short, broad and flattened.

Four species of Ostriches are now generally recognised, but the differences are not very marked or clearly defined. In addition to the Southern Ostrich (*S. australis*) and the original North African and Arabian bird (*S. camelus*), the Somali (*S. molybdophanes*) and East African (*S. massaicus*) Ostriches have recently been recognised as distinct.

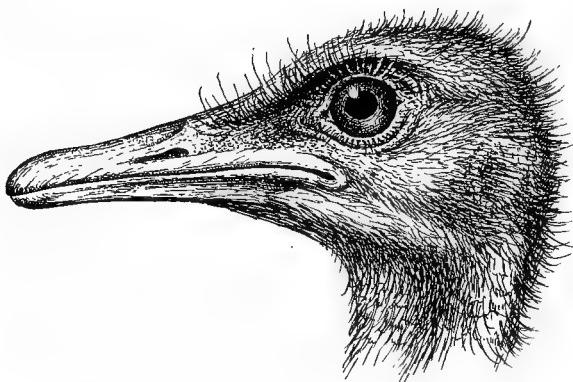


FIG. 161.—Head of *Struthio australis*, after Wolf.

The males of the North African and Masai Ostriches have reddish necks, which in the former is very thinly, in the latter very thickly clothed with woolly down; the males of the Somali and Southern Ostrich have bluish-grey necks, while the former is distinguished from the latter by the presence of a horny shield at the top of the head surrounded by downy hairs. This is entirely absent in the South African bird.

The eggs of the various species of Ostriches show differences which seem to be fairly constant. Those of *S. camelus* are quite smooth and polished with no pores or pits such as are characteristic of the other three species. In *S. massaicus* and *S. molybdophanes* the pits or pores are of a deep purple colour, while those of *S. australis* are but slightly darker than the rest of the surface of the shell.

Ostriches are found throughout the greater part of Africa south of the Atlas Mountains, though absent from the great West African forest districts, the Congo basin and Nyasaland. They are also found in Arabia and Syria, and may still extend as far east as Persia and Turkestan. Fossil remains of representatives of the genus have been found in the pliocene or late tertiary beds of the Siwaliks of North India, of Southern Russia and the Island of Samos.

814. *Struthio australis*. Southern Ostrich.

Struthio camelus, (nec Linn.) Grill, K. Vet. Akad. Handl. Stockh. ii, no. 10, p. 55; Tristram, *Ibis*, 1860, p. 74; P. L. Sclater, *Trans. Zool. Soc.* iv, p. 354 (1862); Layard, B. S. Afr. p. 281 (1867); Finsch & Hartl. *Vögel Ost-Afr.* p. 597 (1870); Shelley, *Ibis*, 1882, p. 368 [Mashonaland]; Holub & Pelzeln, *Orn. Süd-Afr.* p. 195 (1882); Butler, *Feilden and Reid*, *Zool.* 1882, p. 339.

Struthio australis, Gurney, *Ibis*, 1868, p. 253; *id. in Andersson's B. Damaral.* p. 251 (1872); Buckley, *Ibis*, 1874, p. 391; Gurney, *Ibis*, 1884, p. 465; Sharpe, *ed. Layard's B. S. Afr.* p. 791 (1884); Fleck, *Journ. Ornith.* 1894, p. 379; Salvadori, *Cat. B. M.* xxvii, p. 575 (1895); Cronwright Schreiner, *Zool.* 1897, p. 97 with plate; Shelley, *B. Afr.* i, p. 196 (1896); Marshall, *Ibis*, 1900 p. 269; Reichenow, *Vög. Afr.* i, p. 12 (1900); Oates, *Cat. B. Eggs*, i, p. 3 (1901).

Other references are:—Kolben, *Cape of Good Hope*, Engl. ed., ii, p. 146 (1731); Sparrman, *Voyage to the Cape of Good Hope*, English 4to ed., ii, pp. 120-5 (1785); Lichtenstein, *Travels in S. Africa*, English ed. i, p. 110, ii, pp. 25-8, 209 (1812-15); Burchell, *Travels*, i, pp. 203, 244, 279 (1822); Gordon Cumming, *Five Years of Hunters' Life*, new ed. i, pp. 75, 113 (1855); Andersson, *Lake Ngami*, p. 253, pl. vii, (1856); Hall, *Cape Monthly Mag.* i, p. 172 (1857); Livingstone, *Missionary Travels*, p. 158 (1857); Drummond, *Large Game*, pp. 407, 427 (1875); Andersson, *Notes on Travels*, p. 59 (1875); Mosenthal and Harting, *Ostriches and Ostrich Farming*, pp. 9-54 (1877); Douglas, *Ostrich Farming in South Africa* (1881); Nicolls and Eglington, *Sportsman in S. Afr.* p. 131 (1892); Newton, *Dict. Birds*, p. 662 (1894); Nolte, *Journ. Ornith.* 1895, pp. 44-79; Kirby, *Haunts Wild Game*, p. 559 (1896).

"Struis-vogel" of the Dutch; "Inciniba" of the Amaxosa (Stanford); "Intye" of the Zulus (Drummond); "Nche" of the Bechuanas (Nicolls and Eglington).

Description. *Adult male.*—Plumage, which only covers the lower half of the neck and the upper portion of the body, jet black, except for the primary quills of the wings, which are white, and the rectrices, which are white or pale fawn coloured.

Iris hazel; bill horn-colour, the edge and base of the upper mandible reddish, which is more marked in the breeding season; skin of the head, neck and legs lead-grey to whitish-grey; row of large scales on the tarsus red in the breeding season, horny at other times. No horny shield at the top of the head, and no marked white band at commencement of the neck feathering.

Height of a large male in the South African Museum 7 feet 10 inches; tarsus 18·0 inches. The female is smaller than the male and the plumage is a pale brown throughout except the longer wing-feathers which are dirty white; bare skin of neck and legs slaty-grey; bill blackish; tip black. Height about 6 feet; tarsus 14·5.

The nestling is pale straw coloured, the crown being more fulvous, the head and neck variegated with longitudinal black streaks; the back is covered with coarse flattened bristles, each tipping a coming feather; these are white and black intermingled, giving a variegated appearance to the back. As the bird grows the coarse bristles drop off and the back becomes covered with softer down feathers, mingled black and dirty white.

Distribution.—The Southern Ostrich is found throughout the greater part of South Africa south of the Cunene and Zambesi Rivers; north of this line up to about the Rufiji River, in German East Africa, the Ostrich is not found, while further north again two or three other species take the place of our southern bird.

The Southern Ostrich was formerly found everywhere throughout the dryer and more open country of South Africa; in the middle of the last century, owing to constant hunting for the sake of its plumes, it had become almost exterminated in Cape Colony, the Orange Free State, and the more settled parts of the Transvaal. About 1870, however, Ostrich farming on a large scale was taken up in Cape Colony, and at the present time wild birds or the descendants of domesticated birds are to be found in a good many districts of the Colony, while in Mashonaland, the Eastern Transvaal and in the neighbouring Portuguese border herds of undoubtedly wild birds still exist. This is also the case in the Kalahari Desert and Bechuanaland.

History and habits.—The Ostrich has naturally been known from the earliest days of Cape settlement; Kolben's account of it is quaint and fairly accurate, though in it he reports the old story often repeated, that the eggs are hatched by the heat of the sun. He further states that they are "so numerous in the Cape countries

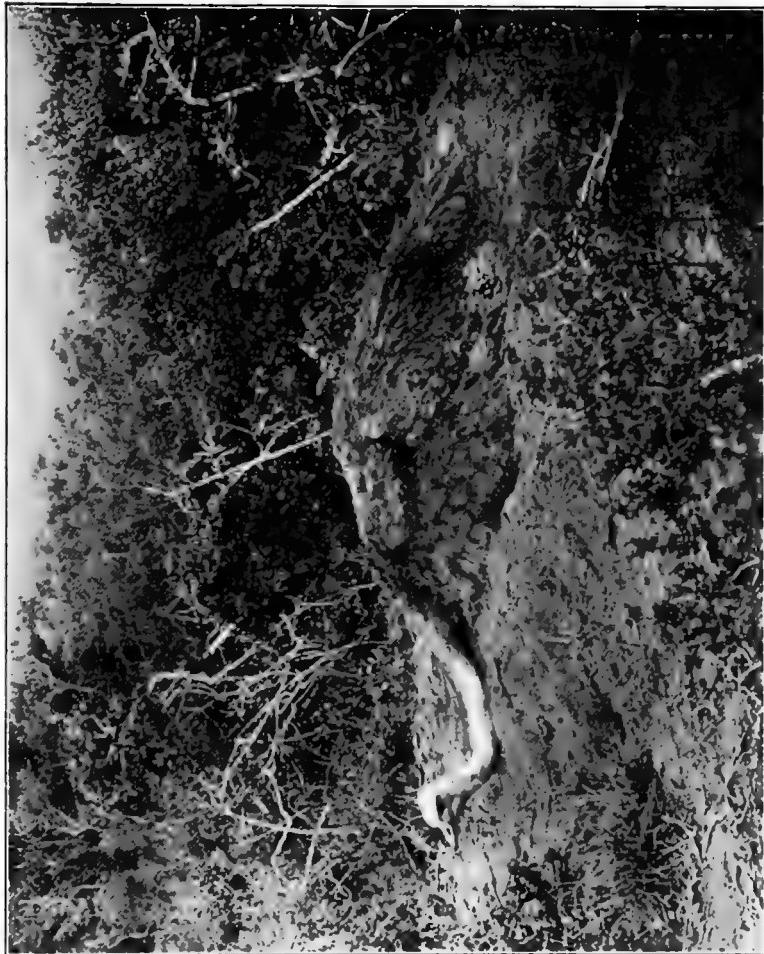


FIG. 162.—Hen Ostrich sitting on its nest. From a photograph by Mr. R. H. Ivy.

that a man can hardly walk a quarter of an hour without seeing one or more."

It is impossible within a few paragraphs to do anything more but touch lightly on one or two more important points of the habits of this interesting bird. The best early account is undoubtedly that of Lichtenstein, while recently Mr. Cronwright Schreiner has given very clearly and plainly the results of his observation and experiences as an Ostrich farmer.

In a natural state the Ostrich was usually seen in small parties of a cock and several hens or young birds; they very often attached themselves to the large herds of game so abundant on the South African plains, and appear to have had a special predilection for the Quagga and Black Wildebeeste. The Ostrich is a great runner, and will outstrip and exhaust a mounted horse; it has a long raking stride and does not, as is commonly supposed, aid itself by its wings, which are kept just on a level with the back and free from the thighs and are not raised up or spread out. Ostriches can jump over quite high places and deep ditches, and can also swim very well. The cry of the Ostrich is a booming or "brooming" noise, by many people compared to the roar of a lion when heard at a considerable distance. It is confined to the cock bird, and is generally heard at night. It can only be produced by the bird when standing still. Besides this both sexes can give an angry hiss and a guttural gurgle when frightened, while the chicks have a plaintive penetrating "cheep."

The Ostrich is a delicate feeder, walking vast distances and plucking a leaf here or a leaf there, but seldom stopping long in one place, and carefully selecting what it likes. When domesticated lucerne and other green stuff is specially grown for them, while in some parts of the country they feed largely on the prickly pear. Apart from its regular food, the Ostrich has a way of picking up and swallowing almost anything small enough to pass down the neck, such as oranges, small tortoises, chickens, cartridge cases, and especially copper coins, which have been found solidified together into considerable masses in the stomachs of individuals which have lived in captivity in the Zoological Gardens in London.

It has usually been stated and maintained that the Ostrich is polygamous, the cock mating with several hens, all of whom lay in a single nest; this is denied by Mr. Cronwright Schreiner, who maintains that the cock pairs only with a single hen and that one pair alone are responsible for the nest. He further states that

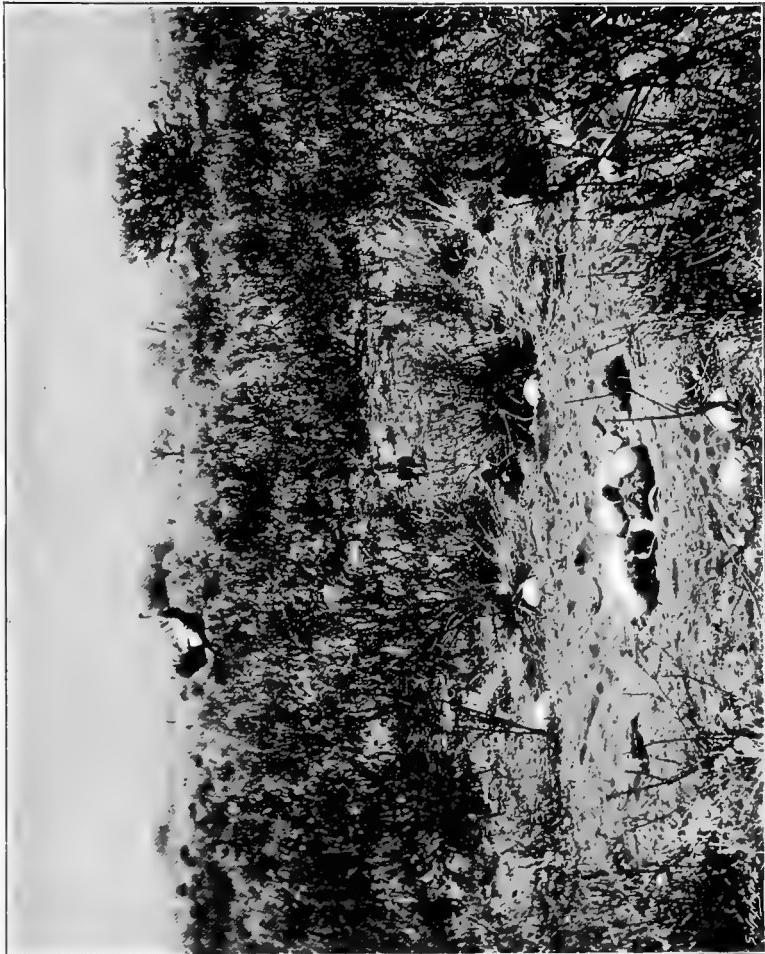


FIG. 163.—Nest of an Ostrich with the eggs just hatched out, and the cock bird in the distance. From a photograph.

when, as undoubtedly often happens, other unattached hens, some six or seven in number, lay eggs in the same nest so that as many as sixty or seventy eggs result, very few if any of these are hatched, and the result is disastrous; while if the single original pair are undisturbed and the monogamous state continues, there will be a good yield of chicks. Mr. Cronwright Schreiner, therefore, considers that in the Ostrich monogamy is normal, polygamy abnormal, the latter being due chiefly to a preponderance of hens brought about by the more pugnacious nature of the males and by their being much more liable to accidental death both in a wild and domesticated state.

The cock and hen bird together construct the nest, which is merely a slight depression in the soil made by scraping or kicking out the earth, usually in a somewhat retired spot. The hen then lays an egg every other day, her full complement being from fifteen to twenty; she usually commences to sit before the full complement is completed, but when the sitting assumes its regular course the hen sits during the day from about 8 a.m. to 4 p.m., the cock at night from 4 p.m. to 8 a.m. This goes on regularly during the whole incubation-period which lasts from five to six weeks. When the birds are sitting, the head, neck and tail are laid flat on the ground and the thighs are covered by the wings, so that it is difficult to see either the black male at night or the brown hen by day.

The chicks when hatched are perfectly helpless for about twenty-four hours, after which they begin to run and eat and are carefully tended by both parents.

The eggs of the Southern Ostrich are spheroidal in shape; the shell is strong and thick, the surface smooth and glossy as if polished and the whole is covered with a series of minute pores or pits. Normal eggs measure about $6\cdot0 \times 5\cdot90$, but much smaller ones, about $4\cdot50 \times 3\cdot75$, are frequently met with, besides various abnormalities in shape and texture.

The commercial value of Ostriches is derived from their plumes; these are the longer tail- and wing-feathers, which have been prized as ornaments from the earliest times. In order to obtain these the Ostrich has always been the object of pursuit, but it was not till about the year 1870 that the idea arose of breeding and domesticating the birds on a large scale. So rapidly did the industry spread that, whereas in 1865 there were only 80 tame Ostriches in the Colony, 32,000 were included in the census of 1875, the greater number of which were to be found in the districts of

Riversdale and Oudtshoorn in the south-west of the Colony. Since then the industry has had many fluctuations, but it has now settled down, and though the profits and prices are not what they were in the early days, Ostrich-farming brings a very steady and fair return when pursued under favorable conditions.

The following table shows the fluctuations in the production and value of Ostrich-plumes during the last thirty years.

Year.	lbs. exported.	Value.	Average value per lb.
1874 ..	36,829 ..	£205,640 ..	£5 11s. 7d.
1880 ..	163,065 ..	£883,632 ..	£5 9s. 7d.
1885 ..	251,084 ..	£585,278 ..	£2 6s. 7d.
1890 ..	212,276 ..	£563,948 ..	£2 13s. 2d.
1895 ..	353,651 ..	£527,782 ..	£1 9s. 9d.
1900 ..	412,832 ..	£876,801 ..	£2 4s. 4d.
1903 ..	490,066 ..	£945,001 ..	£1 19s. 2d.
1904 ..	470,381 ..	£1,058,988 ..	£2 5s. 0d.

An excellent paper on the progress of Ostrich-farming in South Africa was read by the late Hon. Arthur Douglas in Section D, at the meeting of the British Association at Cape Town on August 17th last year. It will be found in print in the number of "The Ibis" for January, 1906.

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NOTE.—Synonyms are printed in italics; Vernacular names, both English and Dutch, and the Latin names used in this work in ordinary type.

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